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8.2 BIOLOGICAL RESOURCES

Biological resources potentially affected by the proposed project, including wetlands, vegetation, and wildlife, are described in Section 8.2.1. Sections 8.2.2 through 8.2.4 describe the expected project-related impacts to biological resources and measures proposed to mitigate, or compensate for those impacts. Laws, ordinances, regulations and standards (LORS) for protection of biological resources are provided in Section 8.2.5. The other sections describe agency contacts made during preparation of this section and permits associated with biological resources that will be obtained prior to project construction. Through agency consultations, project modifications, and appropriate mitigation measures, the Colusa Power Plant project will conform to all applicable LORS for protection of biological resources.

The biological resource evaluation for the Colusa Power Plant project includes the 200-acre Reliant parcel that will contain a 16.6-acre power generation facility, a 10.6-acre switchyard, and a 35-acre construction staging area. Also included in the evaluation is an area surrounding the PG&E Compressor Station that includes the location where the proposed electric transmission line route would tie into the existing transmission lines, and a gas line between the proposed plant and the existing PG&E Compressor Station. The area encompassing the location of the proposed underground duct bank from the switchyard to the PG&E Compressor Station was also evaluated in the event that the compressor station repowering option would occur. Other project components evaluated include a water supply pipeline alignment, a proposed access road corridor that intersects the existing PG&E access road near the PG&E Compressor Station, and the locations of planned roadway improvements at the Teresa Creek Bridge and the intersection of Delevan and McDermott roads. The access corridor from I-5 (Delevan Road, McDermott Road, and Dirks Road) was also visually inspected. These features are shown on Figure 8.2-1, Biological Resources Study Area.

The impact assessment for biological resources included informal consultation with resource management agencies, literature review, and field surveys. Biological resource field surveys were conducted on the dates shown in Table 8.2-1.

A list of plant and animal species observed during these field studies is provided in Tables 8.2-2 and 8.2-3.

8.2.1 Affected Environment

The proposed Colusa Power Plant would be located in northern Colusa County in the western portion of the Sacramento Valley. The region is one of California's top twenty agricultural producers. The most significant crops are rice, tomatoes, almonds, wheat, and cucumbers.

The Sacramento River forms the border on the eastern side of Colusa County. The southern end of the Mendocino National Forest and the foothills of the Coast Range are on the western side of the county. The county is part of both the Sacramento Valley and the Klamath bioregions, with the middle third of the county transitioning between these two regions. The project site is located in this transition region. The predominant natural vegetation communities in this portion of the Sacramento Valley are grasslands, oak woodlands, riparian forests, and vernal pools. Vegetation communities typical of the Klamath bioregion include mixed conifer forest and chaparral.

The 10,783-acre Sacramento National Wildlife Refuge (NWR) is located approximately 6 miles to the east of the proposed Colusa Power Plant site, and the 5,797-acre Delevan NWR is located approximately 10 miles to the southeast of the plant site (Figure 8.2-2). Both of these refuges are part of the Sacramento Valley NWR Complex managed by the U.S. Fish and Wildlife Service. This group of six refuges has been created to provide wintering habitat for waterfowl and other waterbirds. The Sacramento Valley NWR was created in 1937 and the additional refuges were added between the 1950s and the 1980s. The principal habitats on the refuges are seasonal marshes with smaller amounts of uplands, permanent ponds,

and riparian areas. These refuges support a diverse flora and fauna. The federally listed threatened and state listed endangered bald eagle (*Haliaeetus leucocephalus*), the state listed endangered peregrine falcon (*Falco peregrinus*), the state and federally listed endangered giant garter snake (*Thamnopsis gigas*), and the state and federally listed endangered palmate-bracted bird's beak (*Cordylanthus palmatus*) all occur at the refuges.

The Glenn-Colusa Canal lies approximately 0.75 mile to the east of the proposed plant site and the Tehama-Colusa Canal lies approximately 0.5 mile to the west (Figure 8.2-1). The Tehama-Colusa Canal is part of the federal Central Valley Water Project (CVP) that delivers agricultural water to 300,000 acres of farmland in Tehama, Glenn, Colusa, and Yolo counties. This canal is concrete lined and bordered by graveled roads on both sides. This type of construction prevents vegetation from establishing itself in or adjacent to the canal, and the canal therefore has little value as wildlife habitat. The Glenn-Colusa Canal, maintained by the Glenn-Colusa Irrigation District, also provides agricultural water to the region. However, the Glenn-Colusa Canal is bounded by earthen levees. This canal, which is bordered on the east by rice fields in the vicinity of the project area, provides habitat for some aquatic and avian species. Both of these canals receive water from the Sacramento River as well as runoff from the Coast Range. The Glenn-Colusa Canal also receives some water from Stony Creek.

Hunters Creek drains to the east of the project site, and Funks Creek drains the area south of the project site (see Figure 8.14-1, Surface Water Features). In 1976 a reservoir with a capacity of 1,170 acre-feet was constructed on Funks Creek, approximately 2.5 miles southwest of the project site. Although the hydrology and morphology of these streams have been anthropogenically altered, the streams provide valuable habitat for native flora and fauna. Tributaries of the Sacramento River such as Funks Creek and Hunters Creek provide migration routes for Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and game fish species such as striped bass (*Morone saxatilis*).

Land east of the Glenn-Colusa Canal is used mainly for growing rice. West of the Glenn-Colusa Canal, the land is predominantly used for grazing cattle. The proposed plant site is currently used for grazing cattle, and is characterized by the gently rolling hills typical of the transition area between the Valley floor and low Coast Range foothills.

Habitat at the proposed project site is primarily grassland (Figure 8.2-3A). Much of the area is colonized by non-native plant species, which were introduced during European settlement of the Central Valley. Dominant species include yellow star-thistle (*Centaurea solstitialis*), medusa head (*Taeniatherum caput-medusae*) cut-leaf, wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), filaree (*Erodium botrys*) and geranium (*Geranium dissectum*). These grasslands provide habitat for common wildlife species such as the meadowlark (*Sturnella neglecta*), savannah sparrow (*Passerculus sandwichensis*), and coyote (*Canis latrans*).

At the northern end of the project site, there are two small drainages (Figure 8.2-3A). These seasonal wetlands are dominated by ryegrass (*Lolium perenne*), and have other wetland species such as spikerush (*Eleocharis macrostachya*) and geranium (*Geranium dissectum*). In the vicinity of these drainages, and also in the southwestern corner of the project site, there are some alkali scalds supporting vegetation tolerant of alkaline conditions. These alkali grasslands are dominated by peppergrass (*Lepidium nitidum*) and storksbill (*Erodium botrys*).

A complex of vernal pools is located east and northeast of the PG&E Compressor Station (Figure 8.2-3A). Vernal pools are seasonally inundated depressions found on soils with an impermeable layer such as hardpan, claypan, or volcanic basalt. The pools east/northeast of the compressor station support plant species typical of alkaline soils, and are interspersed with upland alkali scalds like those described above. This complex of vernal pools supports a diverse assemblage of native flora, including species such as coyote thistle (*Eryngium vaseyi*), vernal pool popcorn (*Plagiobathrys stipitatus* ssp.

micronthus), meadowfoam (*Limnanthes douglasii*), Fremont's goldfields (*Lasthenia fremontii*) and water-starwort (*Callitriche marginata*). Although the main concentration of pools is located outside of the proposed project area, the complex does extend somewhat northwest into the area where the transmission line interconnection option would be located (Figure 8.2-3A). Additionally, the complex extends south of the existing PG&E access road. This road currently fragments the complex, isolating a few pools located south of the road from the main complex.

Access to the proposed power plant from I-5 would be achieved via existing roads, although some modifications and post-construction re-paving would be required, as described in Section 3.5.5. Habitat surrounding these roadways consists of roadside ruderal vegetation, irrigation channels and drains, and irrigated agriculture, primarily rice fields (Figure 8.2-3B). The rice fields, connected by a network of small canals and drains, provide foraging habitat for a number of aquatic species, waterfowl, and migratory birds.

8.2.1.1 Wetlands

Wetland determinations were conducted on March 26 and 27, and April 9 and 10, 2001. Wetlands were determined using the routine onsite method described in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987). In the absence of human disturbance or unusual circumstances, an area must possess indicators (characteristics) of three parameters to be considered a jurisdictional wetland. This method is referred to as the three-parameter approach. The three parameters are: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

8.2.1.1.1 Vernal Pools

Vernal pools are shallow topographic depressions or soils with an impermeable layer of clay and/or an iron-silica cemented hardpan. Hydrophytic annual herbs and grasses (a wetland parameter identified above) dominate the depressions (Holland, 1986). Winter rainfall does not penetrate the hardpan or claypan layer, and pools form in the depressions. As air temperatures begin to rise in the spring, water in the pools begins to evaporate, often leaving behind concentric rings of vegetation that encircle the pool.

A complex of alkaline northern claypan vernal pools is present immediately east of the proposed project site. The heart of this complex is located just east of the PG&E Compressor Station (Figure 8.2-3A). Some shallow, less well-defined pools on the periphery of the complex extend northwest through the proposed project area. Well-developed vernal pools are present on both sides of the existing PG&E access road. Based on topographic maps, the vernal pool complex at one time drained into Hunters Creek (USGS, 1958). It is now cut off by a dike and is no longer connected to this drainage system.

Since the land is used for cattle grazing, all of the pools have been affected by the cattle and contain hoofprints, sometimes as deep as 10 inches. The majority of the vernal pools in the project area did not contain ponded water on March 26, 2001, although many were still muddy. A few pools in the heart of the complex and a pool adjacent to the PG&E access road had moderate amounts of ponded water at that time, and two or three pools had less than an inch of water in some of the hoofprints. Vegetation specific to vernal pools such as popcornflower (*Plagiobothrys greenii*), annual bluegrass (*Poa annua*), meadowfoam, and Fremont's goldfields was present.

8.2.1.1.2 Alkali Scalds

Alkali scalds are present along the central-northern portion and southwestern edge of the 200-acre parcel, and south of the PG&E access road. These scalds range from approximately 100 square feet to approximately 4,000 square feet. They are characterized by bare ground, often much paler than the surrounding areas, and low-growing vegetation. Vegetation in this alkali habitat includes barley, soft chess brome (*Bromus hordeaceus*), dwarf peppergrass (*Lepidium latipes* var. *latipes*), cut-leaf plantain

(*Plantago coronopus*), California bur-clover (*Medicago polymorpha*), and long-beaked filaree (*Erodium botrys*).

The series of alkali scalds that runs diagonally along the southwestern edge of the 200-acre portion of the project site was identified by Foothill Associates as a “potential riverine seasonal wetland” (Foothill Associates, 2001). This area is identified in Figure 8.2-3A as alkali grassland. On March 26 and April 9 and 10, 2001 the areas were not wet or damp. Several wetland delineation data points were taken along these swales, both inside and outside the project area boundaries. While some facultative and facultative-wetland hydrophytic plants were present, such as barley, dwarf peppergrass, and plantain, the hydrology and soils generally did not indicate that the areas are wetlands. One exception was a scald located south of the PG&E access road, dissected by a dirt road. This area is lower in elevation than the surrounding area and on April 9 and 10, 2001 cracks in the soil surface were present, indicative of ponding. Vegetation in this scald is similar to other scalds in the vicinity, although the facultative and facultative-wetland species, including plantain and dwarf peppergrass, were more abundant.

8.2.1.1.3 Seasonal Stream

A seasonal stream crosses the northern portion of the 200-acre site. This stream consists of a tributary from the north and one from the south coming together and then draining to the east (Figure 8.2-3A). The corridor extends over 1 mile, has a defined bed and bank and is approximately 6 to 10 inches deep and 2 to 5 feet wide. On March 26, 2001, no water was present in the southern tributary. The northern tributary and the main corridor both contained water, and some portions of the drainage contained standing pools. Wetland determination points recorded in these channels confirmed the presence of wetland vegetation, soils, and hydrology. The dominant plant species in the stream channels are perennial ryegrass, spikerush, and cut-leaf geranium. This area is potentially a jurisdictional wetland.

8.2.1.1.4 Teresa Creek

Between I-5 and the proposed plant site, McDermott Road crosses the southernmost tributary of Hunters Creek (Figure 8.2-1). This stream is known locally as Teresa Creek. Although the active channel of this stream is unvegetated, and therefore considered to be a Water of the U.S., the stream is bounded by a band of wetland vegetation. This band of wetland vegetation, approximately 5 feet wide on each side, is a potentially jurisdictional wetland. Dominant plant species observed along the stream banks include *Verbena bonariensis* and *Leymus triticoides*. Willow herb (*Epilobium brachycarpum*) was also present.

8.2.1.1.5 Artificial Irrigation Ditches

Seasonal agricultural ditches that transport agricultural water and runoff are located along Delevan, McDermott, and Dirks roads (Figure 8.2-3B). Some of these ditches contained a few inches of water on March 26, 2001. While the ditches varied in depth and width, they were generally 2 feet deep and 6 feet wide. The vegetation in these ditches is hydrophytic, with species such as cattail (*Typha* sp.), tule (*Scirpus* sp.) and willow (*Salix* sp.) along some portions of the ditch. Ruderal vegetation is present in other areas of the ditch. Although no data points were taken in these ditches, the presence of water and obligate wetland plant species suggests that these areas are wetlands. However, 33 CFR Part 328.3(a) defines non-tidal drainage and irrigation ditches excavated on dry lands as non-jurisdictional wetlands. Courts have generally held that upland, man-made ditches are not jurisdictional under Corps regulations.

8.2.1.1.6 Non-Wetland Waters of the U.S.

Potential non-wetland waters of the U.S. in the project area include Teresa Creek and two large irrigation canals. Teresa Creek is a tributary to Hunters Creek, which is in turn a tributary to the Sacramento River. Therefore, the unvegetated active channel of Teresa Creek is a water of the U.S. The Glenn-Colusa and

Tehama-Colusa irrigation canals are not likely considered jurisdictional waters of the U.S. because they have been built on uplands and are only used for agricultural purposes (Kelley, 2001).

8.2.1.2 Special-Status Species

The designation of special-status species includes all federal and state listed species and species proposed for listing under the federal and California Endangered Species Acts (ESA), federal species of concern, state species of special concern, and plant species designated as Rare, Threatened, or Endangered (List 1B or List 2) by the California Native Plant Society (CNPS). Special-status species with the potential to occur in the project vicinity were identified from the following sources:

- USFWS species lists provided for each 7.5 minute USGS quadrangle in the project area (Sites, Maxwell, and Logan Ridge);
- A search of all species occurrences in the California Natural Diversity Database (CNDDB) within a 10-mile radius of the proposed plant site (CDFG, 2001);
- Lists of species known to occur in the Sacramento NWR Complex, available online;
- The CNPS electronic inventory (CNPS, 2001).

Table 8.2-4 lists all the species with state or federal listing status that have some potential to occur in the project vicinity. Table 8.2-5 lists all other special-status species with potential to occur in the project vicinity. These tables summarize the preferred habitats for species with potential to occur in the vicinity of the project area. Species with no suitable habitat in the vicinity of the project area are not discussed further in this document.

8.2.1.2.1 Threatened or Endangered Plant Species

Habitat for special-status plant species in the proposed project area is primarily associated with vernal pool and alkali scald habitats. Alkali scalds are located within the areas labeled as alkali grasslands in Figure 8.2-3A. A small area of potential alkali soils is also present on the north side of Delevan Road between I-5 and McDermott Road. This site supports saltgrass and alkali heath and may have some potential to support rare plants. Vernal pool and alkali habitat was surveyed for special-status and rare plant species on March 26 and 27, April 23, and May 11, 2001. Uplands were surveyed April 23. Although suitable habitat for rare plants is present at the proposed project site, no special-status or rare plant species have been observed in the project area or immediate vicinity during field surveys conducted to date. Additional surveys for late blooming rare plants will be conducted in July 2001.

The following threatened or endangered plant species have suitable habitat in the project area and vicinity.

Hoover's Spurge

Hoover's spurge (*Chamaesyce hooveri*) is federally listed as a threatened species. It is classified as rare by the CNPS. This annual herb is endemic to vernal pool habitats and has been known to occur in Tehama, Glenn, Butte, Colusa, Stanislaus, Merced, and Tulare counties (CalFlora, 2001). Its blooming period is from July to August. This species occurs in large vernal pools, the median size being 1.4 acres (Stone et al., 1988). The closest known occurrence is approximately 8.3 miles away (Figure 8.2-2). It was noted in 1992 in the Sacramento NWR. Some of the pools associated with the vernal pool complex adjacent to the project site may have some potential to support this species. However, all of the pools in the project area are quite shallow, and are not likely inundated for long enough to support Hoover's spurge.

Hairy Orcutt Grass

Hairy orcutt grass (*Orcuttia pilosa*) is federally and state listed as an endangered species. It is classified as rare by the CNPS. This annual grass is found in vernal pool habitats and has been identified in Tehama, Glenn, Butte, Stanislaus, Merced, and Madera counties (CalFlora, 2001). It blooms from May to September. This species occurs in large vernal pools, the median size being 4.3 acres (Stone et al., 1988). The closest known location of hairy orcutt grass was identified in 1994, approximately 6.8 miles away in the Sacramento National Wildlife Refuge (Figure 8.2-2). There is a low potential for some of the larger pools associated with the vernal pool complex adjacent to the project area to support hairy orcutt grass, although none of them are as large as those typically occupied by this species. Within the project area, where transmission line routes would connect with the existing transmission lines, the few pools present are small, shallow, and do not likely support hairy orcutt grass.

Palmate-Bracted Bird's Beak

Palmate-bracted bird's beak (*Cordylanthus palmatus*) is federally and state listed as an endangered species. It is classified as rare by the CNPS. This species is found on alkaline soil on an alkaline substrate. Most of the known occurrences are on Pescadero silty clay soils (CDFG, 2001). It is a hemiparasitic annual, and the host plant is believed to be saltgrass (USFWS, 1988). The combination of being dependent on other plants for water and nutrients, salt excretion, and a deep root system are factors that allow this species to grow during the late summer months when most other California annuals have died. It blooms from May to October. It has been known to occur in Glenn, Colusa, Yolo, Alameda, San Joaquin, Madera, and Fresno counties (CalFlora, 2001). The closest known location was identified in 1993, 6 miles away in the Sacramento NWR (Figure 8.2-2).

URS biologists visited a known occurrence of this species along "Road 103," near the town of Woodland, California on May 10, 2001. The palmate-bracted bird's beak at this site was well developed, and easily identifiable. Based on this observation, if present in the proposed project area it would have been detected during rare plant surveys conducted on May 11, 2001. Therefore, and also because soils in the project are not of the Pescadero series typical of habitats where it occurs, palmate-bracted bird's beak does not likely occur in the project area.

8.2.1.2.2 Other Special-Status Plant Species

The following other special-status plant species have suitable habitat in the project area and vicinity.

Little Mousetail

Little mousetail (*Myosurus minimus* ssp. *apus*) is a federal species of concern. It is classified by the CNPS as a plant about which more information is needed before its distribution is assessed. This annual herb is found in alkaline vernal pools and has been found in Tehama, Butte, Colusa, Lake, Contra Costa, Stanislaus, Merced, Fresno, San Luis Obispo, Riverside, and San Diego counties (CalFlora, 2001) and blooms from March to June. This species was not identified by the CNDDB within 10 miles of the project area. This species was not detected during surveys conducted in the project area during its blooming period. Therefore, little mousetail does not likely occur in the proposed project area.

Heartscale

Heartscale (*Atriplex cordulata*) is a federal species of concern and is classified as rare by the CNPS. It blooms from April to October and has been found in sandy alkaline saline soil on alkaline substrates in Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Sacramento, San Joaquin, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo counties (CalFlora, 2001). The closest known occurrence to the project area is located approximately 8 miles away in the Sacramento NWR. It was reported in 1994

(Figure 8.2-2). This species was not detected during surveys conducted in the project area during its blooming period. Furthermore, *Atriplex fruticulosa*, a closely related species, was present and in fruit during surveys conducted in May. Therefore, *A. cordulata* does not likely occur in the proposed project area.

Ferris' Milk-Vetch

Ferris' milk-vetch (*Astragalus tener* var. *ferrisiae*) is a federal species of concern and is classified as rare by the CNPS. It is found in alkaline vernal pools in grasslands and most often occurs in wetlands but is not limited to them. It has been recorded in Alameda, Butte, Colusa, Glenn, Solano, Sutter, and Yolo counties (CalFlora, 2001). The blooming period is from April to May. The closest known occurrence was reported in 1994 and is approximately 12.7 miles away in the Sacramento NWR (Figure 8.2-2). This species was not detected during surveys conducted in the project area during its blooming period. Therefore, Ferris' milk-vetch does not likely occur in the proposed project area.

San Joaquin Saltbush

San Joaquin saltbush (*Atriplex joaquiniana*) is a federal species of concern and is classified as rare by the CNPS. It is found on alkaline soil in grasslands and has been recorded in Alameda, Contra Costa, Colusa, Glenn, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Luis Obispo, Solano, Tulare, and Yolo counties (CalFlora, 2001). It blooms from April to October. The nearest known location of this species to the project site is approximately 8 miles away in the Sacramento NWR (Figure 8.2-2). It was reported in the early 1990s. This species was not detected during surveys conducted in the project area during its blooming period. *Atriplex fruticulosa*, a closely related species, was present and in fruit during May surveys. Furthermore, *A. joaquiniana* was observed in fruit at another site in the Sacramento Valley the day before May surveys were conducted in the project area. Therefore, this species is not likely present in the proposed project area.

Vernal Pool Smallscale

Vernal pool smallscale (*Atriplex persistens*) is classified as rare by the CNPS. This annual herb is endemic to vernal pools and has been recorded in Colusa, Glenn, Tulare, Stanislaus, and Merced counties (CalFlora, 2001). The blooming period is from July to October. The closest known location of this species to the project site is approximately 4.6 miles away in the Sacramento NWR (Figure 8.2-2). It was reported in 1992.

Heckard's Peppergrass

Heckard's peppergrass (*Lepidium latipes* var. *heckardii*) is classified as rare by the CNPS. It grows on alkaline soil on alkaline substrate and has been known to occur in Colusa, Yolo, and Solano counties (CalFlora, 2001). It blooms from April to May. The closest known location of this species is approximately 6 miles away (Figure 8.2-2). It was found in 1994 in the Sacramento NWR.

Brittlescale

Brittlescale (*Atriplex depressa*) is classified as rare by the CNPS. The species grows on clay alkaline soil on alkaline substrate in playa habitats and is present in Butte, Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Madera, Merced, Solano, Stanislaus, Tulare, and Yolo counties (CalFlora, 2001). The blooming period is from May to October. The closest known occurrence is approximately 5.6 miles away, in the Sacramento NWR (Figure 8.2-2). It was recorded in 1994. This species was not detected during surveys conducted in the project area during its blooming period. *Atriplex fruticulosa*, a closely related species, was present and in fruit during May surveys. *Atriplex depressa* does not likely occur in the proposed project area.

Adobe Lily

The adobe lily (*Fritillaria pluriflora*) is a federal species of concern and is classified as rare by the CNPS. This perennial bulb has been found in chaparral, valley grassland, and foothill woodland in clay soil in Butte, Colusa, Glenn, Lake, Mendocino, Napa, Plumas, Solano, Tehama, and Yolo counties (CalFlora, 2001). It blooms from February to April. This species was not identified by the CNDDB within 10 miles of the project area. Adobe lily was not detected during surveys conducted in the project area during its blooming period. This species does not likely occur in the proposed project area.

8.2.1.2.3 Threatened and Endangered Wildlife Species

Habitat in the project area and vicinity was evaluated for its potential to support special-status wildlife species on March 9, 26, and 27, 2001. Threatened and endangered wildlife species with potential to occur in the project area are discussed below.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is listed as threatened under the California ESA. Swainson's hawks are open-country birds that nest in the Central Valley of California and in the juniper woodlands of Modoc County. Nests are typically found in scattered trees or along riparian corridors adjacent to annual grasslands, pastures, alfalfa, and other crops that provide foraging habitat (CDFG, 1994). Swainson's hawks also nest in urban areas, although the reproductive success of pairs in urban areas has been shown to be lower than that of birds that nest in rural areas (England et al., 1995). Swainson's hawks forage primarily on small rodents and reptiles during the breeding season and insects during the nonbreeding period (England et al., 1997). Agricultural areas are most often used by foraging Swainson's hawks just after harvest or irrigation when prey populations become exposed or brought to the surface (Smallwood, 1995). The current population of nesting Swainson's hawks in California is believed to be 10 percent of historic numbers due to loss of breeding habitat in the state and wintering habitats in Mexico, Central, and South America. Elimination of breeding habitat is the result of several land conversion activities, including loss of small farms with shelterbelts and tree plantings to larger agribusiness, increasing development of woody perennial crops (i.e., orchards and vineyards), and urban development (England et al., 1997).

Grasslands in the proposed project area provide suitable foraging habitat for nesting Swainson's hawks, and Swainson's hawk nesting activity in the vicinity of the project area was high during 2000. Six young hawks were fledged from five nests observed within 6 miles of the proposed plant site during the nesting season of 2000 (CDFG, 2001). All of these nests were located to the south and east of the proposed plant site (Figure 8.2-2). Two of the nests observed in 2000 were located approximately 3 miles from the proposed plant site. The standard flight distance between successful nest sites and suitable foraging habitat is 10 miles (CDFG, 1994).

The CDFG recommends specific management strategies for Swainson's hawk based on the presence of active nest sites within 10, 5, or 1 mile of a project site. Because active nests have been previously documented within 5 miles of the proposed plant site, URS biologists conducted Swainson's hawk nest surveys within one mile of the project area on April 24, 2001. The area within 1 mile of the proposed plant site is characterized by rolling hills with very few trees, although there is one stand of valley oaks (*Quercus lobata*) in a low-lying drainage area. An approximately 2,000-square-foot area located on private land west of the Tehama-Colusa Canal was not surveyed due to lack of access. While it is unlikely that there are many trees in this area, there is the possibility that some trees may be present in the lower portions of this area that were not visible from the hilltops in the area surveyed. However, west of the Tehama-Colusa Canal the foothill region begins. Swainson's hawks nest on the valley floor, and are less likely to nest in the Coast Range foothills.

No Swainson's hawk nests were found within the 1-mile survey radius. Two bird nests were recorded in the southern portion of the 1-mile survey area, perched on transmission line towers. Both nests were approximately 18 to 20 inches wide (estimated from the ground) and were made of small twigs. One nest was on private land and was recorded from a distance. No birds were observed on or around either nest. These nests are not likely Swainson's hawk nests because Swainson's hawks are not known to nest in any substrate other than trees (Hofmann, 2001).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) has been proposed for delisting as a threatened species under the federal ESA. This species is listed as endangered under the California ESA. Bald eagle nesting and wintering habitat is afforded protection under both federal and state ESAs. The U.S. ban of certain long-lasting organochlorine pesticides and protection of habitat has been credited with significantly increasing the numbers of bald eagles breeding in the lower 48 states.

In California, bald eagles breed almost exclusively within Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties. Wintering activity occurs throughout the state except for the desert regions east of the Los Angeles Basin (Biosystems, 1994). Suitable nesting and foraging habitat is usually associated with large bodies of water, including reservoirs, natural lakes, or rivers. Bald eagles feed primarily on fish, although birds, mammals, and carrion may also be consumed (Biosystems, 1994). Logging, urban development, and recreational activities pose the major threats to this species population (Zeiner et al., 1990).

An active bald eagle nest was discovered on the eastern side of East Park Reservoir in 1994 (CDFG, 2001). This nest, located approximately 12 miles west of the proposed power plant site, fledged one young eagle in 1996 and one in 1997.

URS biologists have observed bald eagles soaring over grasslands in the Central Valley. Grasslands in the proposed project area could provide low-quality foraging habitat for bald eagles. Although bald eagles may sometimes forage over grasslands, they prefer to forage over water (Biosystems, 1994). The low level of urban and suburban development in the project vicinity may contribute to the frequency at which bald eagles forage over the project area. Bald eagles likely winter in the project vicinity, and given the nearby recently active nest site, it may be that nesting bald eagles forage over the proposed project site infrequently as well.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*) is listed as threatened under the federal and state ESAs. This mostly aquatic snake is the largest of the garter snake genus, *Thamnophis*, and is endemic to the valley floors of the Sacramento and San Joaquin Valleys (USFWS, 1999). Before the conversion of the Central Valley to agricultural lands, giant garter snakes inhabited vast tule and cattail marshes. Today the snakes are found in rice fields, canals, and irrigation ditches (Biosystems Analysis, 1994). Giant garter snakes hunt small fish, tadpoles, and frogs during the spring, summer, and early fall. From late October to late March, giant garter snakes hibernate above the high water line. Hibernaculae are often abandoned rodent burrows, but the snakes can also hibernate in other types of cracks or crevices that would provide them with adequate shelter.

Land use in the region adjacent to and immediately east of the proposed plant site is dominated by rice farming. These rice fields are connected via an extensive network of irrigation canals and drains. This network of aquatic habitat is one of the few types of habitat that still supports giant garter snake. Contiguous with the rice field habitat, just across I-5, lies the Sacramento NWR. This refuge contains extensive wetland habitat that may support giant garter snakes.

In 1999 a giant garter snake was found dead on Riz Road, approximately 9 miles northeast of the proposed plant site, just north of the Sacramento NWR (CDFG, 2001; Figure 8.2-2). An occurrence of giant garter snake was reported in 1987 from a site approximately 10 miles south of the proposed plant site. This species is also known to occur at the Delevan NWR, located approximately 10 miles east/southeast of the proposed plant site. Given the suitability of habitat and the recent nearby occurrences, giant garter snakes may be present in aquatic habitat (canals and rice fields) between I-5 and the proposed plant site.

Chinook Salmon

Chinook salmon (*Oncorhynchus tshawytscha*) historically ranged from the Ventura River in California to Point Hope, Alaska, on the eastern edge of the Pacific and in the western portion of the Pacific Ocean from Hokkaido, Japan, to the Anadyr River in Russia (Healey, 1991). The general life history of the anadromous Chinook salmon includes both freshwater and oceanic phases of development. Incubation, hatching, and emergence occur in freshwater, followed by migration to the ocean at which time smoltification occurs. Maturation is initiated and completed upon return to freshwater habitats. Once maturation is complete, spawning occurs in natal streams.

The National Marine Fisheries Service (NMFS) classifies and lists salmon by Evolutionarily Significant Unit (ESU). “To be considered an ESU, a population or group of populations must (1) be substantially reproductively isolated from other populations and (2) contribute substantially to the ecological or genetic diversity of the biological species” (Myers et al., 1998). Factors used in determining ESUs include spatial, temporal, and genetic isolation, maturation rates, and other life history traits. Three Chinook salmon ESUs migrate through the Sacramento River, and they all receive some federal and state protection.

The Central Valley Spring Run ESU spawns in the Sacramento River basin and is state and federally listed as threatened. This ESU typically enters fresh water between April and June, with spawning occurring between August and October. Juvenile out-migration typically occurs between October and December.

Central Valley Fall/Late-Fall Run ESU spawns in the Sacramento and San Joaquin river basins and is a candidate for federal listing. This ESU may enter fresh water anytime between August and March, with spawning occurring between October and March. Juveniles may emigrate between November and May.

The Sacramento Valley Winter Run ESU spawns in the Upper Sacramento River below Keswick Dam and is state and federally listed as endangered. This ESU typically enters fresh water between January and May, with spawning occurring May through July. Juvenile emigration occurs during February and March.

Of the three Chinook salmon ESUs described above, the spring and winter runs have designated critical habitat in the project area. For these two ESUs, all accessible tributaries of the Sacramento River are considered critical habitats. An adult steelhead (*Onchorhynchus mykiss*) was observed below the Teresa Creek Bridge, in the southernmost tributary to Hunters Creek, known locally as Teresa Creek (Figure 8.2-1). Hunters Creek is a tributary to the Sacramento River, and based on the steelhead observation it is likely accessible to Chinook salmon as well.

Central Valley Steelhead

The Central Valley steelhead ESU (*Oncorhynchus mykiss*) is federally listed as threatened. This ESU occurs in river basins from the Sacramento River to San Francisco Bay. This species can be either anadromous, meaning it migrates from fresh water to the ocean and returns to spawn in fresh water, or it can complete its entire life cycle in fresh water. Those fish that remain in fresh water are referred to as

rainbow trout. Steelhead, the anadromous form of *O. mykiss*, can spend several years in fresh water prior to smoltification and can spawn more than once before dying, unlike most other salmonids (Busby et al., 1996).

The entire Sacramento River Basin is listed as critical habitat for Central Valley steelhead (Federal Register, 2000). The total annual hatchery and wild populations for the Sacramento River was estimated in the early 1990s. The population, based on Red Bluff Diversion Dam counts, hatchery counts, and past natural spawning escapement estimates for some tributaries, was estimated to be no greater than 10,000 adult fish (McEwan and Jackson, 1996). Adult steelhead typically enter freshwater between December and May, with most spawning occurring before the end of May. Juvenile out-migration typically occurs during April and May.

An adult steelhead was observed by a URS biologist in Teresa Creek on March 9, 2001. This fish was observed in the project area, below the Teresa Creek Bridge (Figure 8.2-1). Although this stream is disturbed, and is contained between earthen levees, it may be an important migratory passageway for steelhead. At the site of the bridge, the stream channel substrate consists of small-diameter fine gravels, and may not be appropriate for spawning.

Branchiopods

Animals in the class Branchiopoda are set apart from other Crustacea by their swimming appendages that double as gills. These appendages, along with a deep ventral food groove, form a filter feeding apparatus located behind the head. Branchiopods, including fairy shrimps (order Anostraca), clam shrimps (order Conchostraca), tadpole shrimps (order Notostraca), and water fleas (order Cladocera) use this apparatus filter food from the water in which they live, or scrape food off rocks and sediment.

Many elements of the life cycles of the branchiopod species described in the following subsections are similar. Hatching begins shortly after temporary pools have been inundated by runoff from fall and winter rains. Newly hatched larvae develop through a juvenile stage and eventually become sexually mature adults. A sexually mature female can be identified by the presence of one or more cysts in her ovisac (Eriksen and Belk, 1999). After males and females mate, the female releases her cysts, which will remain in the bottom of the dry pool through the summer.

Habitat potentially supporting branchiopod species in the proposed project area is limited. The majority of suitable branchiopod habitat is concentrated east of the PG&E Compressor Station, north of the existing PG&E access road and is outside of the proposed project area. This concentration of suitable habitat consists of a well-developed complex of vernal pools characterized by mima-mound topography and alkali soils.

Although the heart of this pool complex is outside of the proposed project area, it does extend somewhat into the project area, in the vicinity of the area where the transmission line routes would connect with the existing transmission lines (Figure 8.2-3A). The existing PG&E access road currently cuts off the southeastern end of the complex, and isolates a few well-defined pools. The complex also extends somewhat northwesterly into the upper portion of the 200-acre parcel. Drainage through the complex is from the northwest to the southeast, and the pool depth and definition increases to the southeast, reaching a maximum north of the PG&E access road where the complex terminates along a dike bordering a rice field. While there are a few scattered pools in the northwestern and southeastern portion of this complex, the greatest concentration of pools likely to provide branchiopods with suitable habitat is located east of the PG&E Compressor Station, north of the PG&E access road, which is outside of the proposed project area.

The Conservancy fairy shrimp (*Branchinecta conservatio*) is a federally listed endangered species. This fairy shrimp is endemic to California, and is found in grasslands in the northern two-thirds of the

Central Valley (Eriksen and Belk, 1999). It inhabits large, turbid pools (CDFG, 2001). These pools typically have low conductivity, total dissolved solids, and alkalinity. Within its limited range it is only known from a limited number of sites, including a vernal pool in the Sacramento NWR, approximately 5 miles east of the proposed plant site (CDFG, 2001; Figure 8.2-2). There may be some potential for Conservancy fairy shrimp to occur in pools associated with the vernal pool complex located east of the PG&E Compressor Station.

The heart of this complex is located outside of the proposed project area. It is only the fringes of this complex that extend northwest and southeast into the project area. Inside the project area, there are some pools located both immediately north and south of the existing PG&E access road. There are also some outlier pools in a swath that passes north of the PG&E Compressor Station, into the northern portion of the 200-acre parcel. The pools in this area are very sparse, although there are a few pools in the vicinity of the area where the transmission line interconnection would tie into the existing transmission lines. None of the pools in the project area appears to be of the type that typically supports Conservancy fairy shrimp. However, given the nearby occurrence at the Sacramento NWR, this species has some potential to be present in some of the larger pools associated with this complex located outside the project area.

The vernal pool fairy shrimp (*Branchinecta lynchi*) is a federally listed threatened species. This species is rather widely distributed through the grasslands of California, from Shasta County south to Riverside County. Populations of vernal pool fairy shrimp are often small, and this species tends to be outnumbered by other co-occurring species. Vernal pool fairy shrimp occur in a wide variety of pool types, but are most commonly found in small swales, or vernal pools in unplowed grasslands (Eriksen and Belk, 1999).

Although it is fairly widely distributed throughout the Central Valley, *B. lynchi* is not common on the western side of the Sacramento Valley. The CNDDDB does not contain any occurrence records for *B. lynchi* in Colusa County (CDFG, 2001). The nearest CNDDDB occurrence records from the western side of the Sacramento Valley are from northern Glenn County. At the Sacramento NWR enough sampling has been conducted to detect at least three other species of Branchinectids on the western side of the valley, but *B. lynchi* has not been detected there (Silviera, 2001). One source reports a single occurrence of *B. lynchi* from the center of Colusa County, but no additional information was provided (Eriksen and Belk, 1999). However, vernal pool habitat concentrated east of the PG&E Compressor Station appears suitable for this species. Given the suitability of the habitat, in concert with the lack of occurrences from the region, this species has a low potential to occur in vernal pools in the project area and vicinity.

The vernal pool tadpole shrimp (*Lepidurus packardii*) is a federally listed endangered species. This species is found mainly in the northern and eastern portions of the Central Valley, in vernal pools and swales containing highly turbid water, often in unplowed grasslands. Tadpole shrimps are known to prey upon fairy shrimps, and although it has not been documented, the vernal pool tadpole shrimp probably preys on fairy shrimp when they co-occur (Eriksen and Belk, 1999).

Although the CNDDDB does not report any occurrences of tadpole shrimp from within 10 miles of the proposed plant site (CDFG, 2001), tadpole shrimp are known to occur in the vicinity. Vernal pool tadpole shrimp have been detected in recent years by biologists working at the Sacramento NWR, located approximately 5 miles east of the proposed plant site (Silviera, 2001). Vernal pool habitat concentrated immediately east of the PG&E Compressor Station is suitable for this species, and it has a high potential to occur there. This is outside the proposed project area.

8.2.1.2.4 Other Special-Status Wildlife Species

Special-status wildlife species that are not threatened or endangered, but with potential to occur in the project area, are described below.

San Joaquin Pocket Mouse

The San Joaquin pocket mouse (*Perognathus inornatus* ssp. *inornatus*) is a federal species of concern that occurs only in California's Central Valley. This species constructs burrows in grassy and weedy areas where fine-textured or sandy soils are present (Ingles, 1965). The nocturnal pocket mouse digs burrows in fine, well-drained, deep soil, and its diet consists mainly of grass seed, and some forbs and green grasses seasonally. During periods of intense weather or food shortage, pocket mice may enter an inactive state of torpor. In 1911 and again in 1929, San Joaquin pocket mice were collected from approximately 5 miles southwest of the proposed plant site (CDFG, 2001; Figure 8.2-2).

San Joaquin pocket mice are known from some grassland habitats near the proposed plant site. Upland portions of grassland habitat in the project area are composed of many non-native species that grow densely over the ground, leaving little exposed soil for burrowing. Historically, these same areas may have supported a vegetative community composed of native species that created an environment more suitable for pocket mice. Now the vegetation probably compromises the quality of the habitat for pocket mice. Additionally, much of the soil in the project area has a high clay content, possibly making it difficult for pocket mice to construct burrows. This property of the soil may not compromise the quality of the habitat, however, because there are large, deep cracks throughout much of the soil that could provide small rodents with substantial cover.

Soils just outside the project area, in the heart of the previously described vernal pool complex, are atypical of much of soils in the project area. Perhaps due to the high alkalinity of these soils, there is far more bare ground than was observed throughout the project area. During field visits on March 26, 2001, the "mounds" of the mima-mound topography present at this pool complex were riddled with small mammal burrows. Although most of these burrows were ground squirrel (*Spermophilus beecheyi*) burrows, and an active colony of squirrels was observed, the presence of the squirrels is an indicator that soils are suitable for burrowing. Some smaller burrows of the size constructed by mice or voles were also observed. The abundance of indigenous flora and native topography in this area indicates a past relatively free of disturbance. There is some potential for San Joaquin pocket mice to be present in this area, and therefore this species has moderate potential to occur in the portions of the proposed project area.

Bats

The following special-status bat species are known to occur in California:

- Pacific western big-eared bat (*Corynorhinus townsendii townsendii*), a federal and CDFG species of concern
- Yuma myotis bat (*Myotis yumanensis*), a federal and CDFG species of concern
- Long-legged myotis (*Myotis volans*), a federal species of concern and CDFG proposed species
- Fringed myotis (*Myotis thysanodes*), a federal species of concern and CDFG proposed species
- Long-eared myotis (*Myotis evotis*), a federal species of concern

- Small-footed myotis (*Myotis ciliolabrum*), a federal species of concern
- Hoary bat (*Lasiurus cinereus*), a federal species of concern
- Pallid bat (*Antrozous pallidus*), a CDFG species of concern

The above bat species are generally widespread throughout many regions of California. Bats are commonly found in association with open forests and woodlands, where there is often a water source over which to feed. Suitable roosting and nesting areas include caves, mines, tree snags, buildings, and other human-made structures. In California, these species generally mate during the late fall and give birth to their young between early May and the end of July (Jameson and Peeters, 1988). Loss of riparian foraging areas and roosting habitat presents the biggest threat to declining bat populations in the state.

Some of the above bat species likely forage over the proposed project area, particularly over wet areas such as canals, vernal pools, and seasonal drainages, but also over grasslands. The project area lacks natural bat roost habitat, such as shags, cliffs, or caves. Bridges often provide valuable bat roost habitat. The underside of the bridge over the Glenn-Colusa Canal lacks the features present in or on bridges that provide significant bat roost habitat. The underside of the Teresa Creek Bridge was inspected both on March 9 and March 26, 2001 for sign of bat use. No guano or staining was detected, nor was there any sound or smell to indicate that bats are using the bridge as a day roost.

Horned Lark

The horned lark (*Eremophila alpestris*) is a CDFG species of special concern. This species ranges throughout the state as a year-round resident of grassland and other open habitats where trees and shrubs are absent (Zeiner et al., 1990). Horned larks are permanent residents throughout most of their breeding range. They are often among the most abundant species in grazed areas with population densities highest in the most heavily grazed areas (Beason, 1995). Horned lark populations are threatened by loss of habitat due to urban and agricultural development (Jones and Stokes, 1997).

Horned larks nest on the ground in barren or lightly vegetated areas adjacent to dense stands of vegetation that provide cover and protection from predators. During the winter, they form large flocks that roost and forage together with migrants from outside California (Zeiner et al., 1990). They feed on a variety of invertebrates, seeds, and grasses in grasslands, fallow grain fields, and other open habitats (Zeiner et al., 1990).

Habitat throughout grasslands in the proposed project area is potentially suitable for horned larks. The history of grazing over most of the site may increase habitat suitability for horned larks. On April 23, 2001, horned lark observations were recorded by URS biologists from two locations within grasslands in the proposed project area (Figure 8.2-3A). One horned lark was observed perched on a barbed-wire fence near the western boundary of the 200-acre parcel, near where it crosses over a small seasonal stream. One horned lark was observed on the ground farther east along this seasonal stream, within the 200-acre parcel. Multiple horned larks were also observed during burrowing owl surveys conducted in May. These birds were generally observed in alkali areas, probably because the sparser vegetation characteristic of the alkali grasslands is preferred by horned larks, relative to the denser grasses found in other parts of the project area. Horned larks may nest and/or forage throughout grasslands in the proposed project area, and probably occur more frequently in areas with sparse vegetation, such as alkali grasslands.

Tricolored Blackbird

Tricolored blackbird (*Agelaius tricolor*) is a USFWS and CDFG species of concern that is nearly endemic to California. This species historically nested throughout the Central Valley and along the coast from Sonoma County to Mexico. During the winter, tricolored blackbirds generally withdraw from the

southern San Joaquin Valley and north Sacramento Valley and concentrate around the Sacramento-San Joaquin River Delta and coastal areas, including Monterey and Marin counties (Beedy and Hamilton, 1999). The state's population of tricolored blackbirds has been reduced by an estimated 64 percent from its historic numbers due to the loss of freshwater wetland habitat and human disturbance (San Francisco Estuary Project, 1992).

The tricolored blackbird is a highly colonial species reported to breed in groups of up to 100,000 and 200,000 nests. Much smaller colonies, as few as 50 nests, are also reported in the CNDDB (CDFG, 2001). This species historically nested almost exclusively in freshwater marshes dominated by cattails (*Typha* spp.) or bulrushes (*Scirpus* spp.), with smaller numbers nesting in willow (*Salix* spp.), blackberry (*Rubus* spp.), thistle (*Cirsium* and *Centaurea* spp.), and nettles (*Urtica* spp.) (Beedy and Hamilton, 1999). In recent decades, many colonies have been observed in areas of dense Himalayan blackberry (*Rubus discolor*). High quality foraging habitat for tricolored blackbirds includes irrigated pastures, lightly grazed rangelands, dry seasonal pools, mowed alfalfa fields, feedlots and dairies. Low-quality foraging habitat includes cultivated row crops, orchards, vineyards, and heavily grazed rangelands (Beedy and Hamilton, 1999). Tricolored blackbirds forage opportunistically on locally abundant insects and crustaceans including grasshoppers, snails, and small clams as well as mature and ripe seed grains (Beedy and Hamilton, 1999).

The combination of rice fields, grasslands/grazing lands, row crops and irrigation canals with emergent vegetation in the vicinity of the project area provide a matrix of habitats with the potential to support tricolored blackbirds. The CNDDB documents numerous occurrences of this species from the project vicinity (CDFG, 2001), and a biologist reportedly observed tricolored blackbirds foraging adjacent to the proposed project site (Foothill Associates, 2001). Tricolored blackbirds may construct nests in emergent vegetation present in irrigation ditches along roadsides in the project area, and may forage over grasslands and agricultural lands in the project vicinity.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugea*) is designated as a CDFG and USFWS species of concern. Burrowing owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, they are found in close association with California ground squirrel burrows (*Spermophilus beecheyi*), which provide them with year-round shelter and seasonal nesting habitat. Burrowing owls also use human-made structures such as culverts, debris piles, or openings beneath pavement as shelter and nesting habitat (CDFG, 1995). Burrowing owl populations have been on the decline due to diminishing habitat (CDFG, 1995) and burrowing mammal control (Zarn, 1974). Burrowing owls exhibit a high degree of nest site fidelity. As habitat becomes increasingly fragmented and isolated by development, these sites become increasingly inhospitable for breeding burrowing owls.

Focused preconstruction surveys for burrowing owls were conducted in the project area by URS biologists on May 10 and 11, 2001. Burrowing owl activity has been observed by URS biologists at two locations within the proposed project area. A burrowing owl was observed by URS biologists within the 200-acre parcel, east of the proposed plant site in April (Figure 8.2-3A). The owl emerged from a burrow at this location, and a second burrow was observed approximately 10 feet away. Both burrows had some sign of activity (pellets or whitewash). During surveys conducted in May, two owls occupied these burrows. These owls are assumed to be a breeding pair.

Multiple active burrowing owl burrows (determined by presence of recent whitewash) were observed along the western boundary of the 200-acre parcel by a URS biologist on March 9, 2001 (Figure 8.2-3A). These burrows were all located on the sides of a relatively steep hill located approximately within the northern one-third of the 200 acres. All of the burrows in the sides of this hill were later observed to be

collapsed on March 26, 2001, and remained collapsed and inactive during focused surveys conducted in May.

Burrowing owl activity was observed by URS biologists at another site located just outside of the proposed project area. An active owl burrow (based on presence of whitewash and feathers) was observed south of the existing PG&E access road on March 26 (Figure 8.2-3A). This burrow was investigated again during focused surveys conducted in May. At that time, the burrow was inactive, and may have been inactive for some time. The main factor limiting burrowing owl use of grasslands in the proposed project area is probably the scarcity of suitable burrows. During focused surveys conducted in May, there were only four locations where potentially suitable burrows were present. Three of these locations have already been discussed, including the burrows that were occupied during May surveys, the burrows on the hill that were collapsed and no longer suitable, and the single burrow south of the PG&E access road that was not occupied in May. The only other location where potentially suitable burrows are located is at the western end of the proposed water line from the Tehama-Colusa Canal. There is an active ground squirrel colony occupying burrows in the cut slope leading from the grasslands down to the Canal levee. Scores of burrows in this area could shelter burrowing owls, although no owl activity or sign of owls was detected in this area during the May surveys. Additional pre-construction surveys will be conducted during the winter season of 2001.

Swallows

Cliff swallows (*Hirundo pyrrhonota*), which are protected under the Migratory Bird Treaty Act, make nests of mud pellets that are often attached to human-made structures. Cliff swallows nest from approximately April to August, with a peak of nesting activity in June (Zeiner et al., 1990). About 300 cliff swallow nests were observed attached to the underside of the bridge over the Glenn-Colusa Canal during site visits conducted in March 2001. Hundreds of swallows were active in and around the nests on March 26 and 27, 2001. Cliff swallows were also observed using nests under the Teresa Creek Bridge in May.

Western Spadefoot

The western spadefoot (*Scaphiopus hammondi*) is a USFWS and CDFG species of special concern. This amphibian occurs in the central and southern Coast Ranges, the Central Valley, and the foothills of the Sierra Nevada (Stebbins, 1985). This spadefoot has lost substantial portions of its breeding habitat to urban and agricultural development.

The western spadefoot primarily inhabits grasslands, frequenting washes, floodplains of rivers, alluvial fans, playas, and alkali flats, but this species also ranges into the foothills and mountain valleys up to 3,000 feet. It prefers areas of open vegetation and short grasses where the soil is sandy or gravelly (Stebbins, 1985). Breeding habitat consists of seasonally inundated pools or occasionally low-gradient, seasonal streams (Jennings and Hayes, 1994).

Spadefoots are strictly nocturnal. During the day and during long dry periods they hide in deep, almost vertical burrows. Most of the year is spent in these underground burrows that are up to 36 inches deep (Stebbins, 1972). Adult spadefoots consume insects, worms, and other terrestrial invertebrates. Except during the breeding season, adult spadefoots do not move around much, but are sit-and-wait predators.

Suitable habitat for the western spadefoot occurs in the proposed project area. Potential breeding habitat includes the seasonal drainage that runs from west to east across the northern portion of the 200-acre site, as well as vernal pools. The vernal pool complex mostly located outside of the proposed project area is highly suitable spadefoot breeding habitat, while the shallower outlier pools found within the project area, around the margins of the complex, provide less suitable breeding habitat. Also located just outside of the proposed project area, a shallow, ephemeral stock pond located west of the 200-acre site also could

provide spadefoots with highly suitable breeding habitat. This species may be present in the proposed project area.

8.2.2 Environmental Consequences

The analysis of potential project-related impacts to biological resources is based on project activities described in the second paragraph of Section 8.2, and as described in more detail in Chapter 3. The project would have a significant impact on vegetation and wildlife if it would:

- Cause a fish or wildlife population to drop below self-sustaining levels (CEQA Guidelines, Section 15065 (a)).
- Threaten to eliminate a plant or animal community (CEQA Guidelines, Section 15065 (a)).
- Substantially affect, reduce the number of, or restrict the range of unique, rare, or endangered species of animal or plant, or the habitat of the species (CEQA Guidelines, Section 15065 (a), Appendix G (c), Appendix I (II.4.b) and (II.5.b)).
- Substantially diminish or reduce habitat for fish, wildlife, or plants (CEQA Guidelines, Section 15065 (a), Appendix G (t)).
- Interfere substantially with the movement of resident or migratory fish or wildlife species (CEQA Guidelines, Appendix G (d)).
- Change the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects) (CEQA Guidelines, Appendix I (II.4.a) and (II.5.a)).
- Introduce new species of plants or animals into an area, or act as a barrier to the normal replenishment of existing species (CEQA Guidelines, Appendix I (II.4.c) and (II.5.c)).
- Increase the rate of use of any natural resources (CEQA Guidelines, Appendix I (II.9)).
- Deteriorate existing fish or wildlife habitat (CEQA Guidelines, Appendix I (II.5.d)).

These criteria have been used to evaluate the proposed project's impact on vegetation and wildlife. Impacts to biological resources are discussed below. Impacts primarily related to construction of the proposed plant, or specific to one plant or animal species, are described first, under specific resource headings. Impacts primarily related to operation of the proposed plant, or that would affect a wider group of resources, are described in Section 8.2.2.3.

8.2.2.1 Wetlands and Non-Wetland Waters of the U.S.

The only location where the proposed project would affect potentially jurisdictional wetlands and/or non-wetland waters of the U.S. is at Teresa Creek, the southernmost fork of Hunters Creek. The active channel of this stream is a potentially jurisdictional water of the U.S. The channel is bordered on both sides by a narrow band of potentially jurisdictional wetlands, approximately 5 feet wide. As described in Section 3.6.3, Offsite Roadway Improvements, the new bridge would span the stream, and the abutments would be set back farther from the stream than those of the existing bridge. Therefore, replacement of the Teresa Creek Bridge would result in no permanent loss of wetland habitat, and could potentially result in a small increase in the amount of jurisdictional wetlands present at the site.

Temporary disturbance to some of the wetlands present at the Teresa Creek Bridge site would be unavoidable during the bridge replacement, unless both the permanent and temporary bridges were prefabricated and installed over the existing bridge structure. This is not likely to occur. Heavy equipment used to remove the existing bridge and construct the new bridge would denude the area surrounding the bridge. Unless the road closure option were selected, during construction a temporary bridge and detour would be constructed within 100 feet east of the existing bridge. This would likely involve placing large culverts in the stream and piling rock and earth around them to form a temporary crossing. Conservatively assuming that all the wetland vegetation between the existing bridge and the temporary crossing is disturbed, approximately 1,000 square feet of potentially jurisdictional wetlands would be disturbed during construction. Because these wetlands provide habitat for native plants and animals, this would be a significant impact.

On the north bank of Teresa Creek, immediately west of the existing bridge, two culverts empty into the creek. The action of the water draining from the culverts has caused considerable erosion of the stream bank at the outfall. During the bridge replacement, a wall would be constructed in front of the culverts, the culverts would be extended through the wall, and the stream bank behind the wall, which has been eroded, would be back-filled. Although it is located below the normal high water elevation, the area where this erosion is occurring is primarily unvegetated. Therefore this area is potentially a jurisdictional water of the U.S. The described wall construction and backfill would result in the permanent fill of approximately 600-square feet of Waters of the U.S. This action would not likely affect any sensitive plant or animal species, and would not be a significant impact. If a prefabricated bridge were installed over the existing bridge structure, these impacts would not occur.

Temporary fill in waters of the U.S. may be required to construct an alternate crossing while the Teresa Creek Bridge is under construction. Although this fill has the potential to affect listed salmonids, that impact is addressed in Section 8.2.2.2.3. Impacts to wetlands resulting from placement of this fill are included in the 1,000 square feet of temporary wetland impacts described above. Placement of fill in Waters of the U.S. is regulated by the U.S. Army Corps of Engineers. Temporary placement of the fill itself would not be a significant impact.

8.2.2.2 Special-Status Species

8.2.2.2.1 Threatened and Endangered Plant Species

Based on the results of plant surveys conducted to date, habitat that may support threatened or endangered plant species in the project area is limited to vernal pools, although no special-status plant species have been observed during surveys conducted to date.

Vernal pool habitat at the eastern end of the transmission line interconnection, where it would connect to the existing transmission lines, has a low potential to support Hoover's spurge and hairy orcutt grass (Figure 8.2-3A). It should be noted, however, that the few pools in this area are relatively shallow and short-lived, and are not the type of large, long-lived pools that typically support these species. For this reason, although a final determination cannot be made until late blooming plant surveys are completed early this summer, these species are less likely to occur here.

Direct impacts to vernal pool habitat would be avoided, as described in Section 5.1 of this application. However, impacts to Hoover's spurge or hairy orcutt grass could occur, if these species are present, if maintenance activities associated with the proposed transmission line interconnection are conducted between June 15 and October 1. If maintenance during this time frame results in disturbance to a pool occupied by either species, it would prevent the plants from completely developing and producing seed. The maintenance schedule described in Section 3.7 of this application (typically winter or early spring) would minimize disturbance to vernal pool habitat, and most of the plant and animal species that occur there. However, Hoover's spurge does not bloom until July, and hairy orcutt grass may bloom as late as

September. Therefore, maintenance activities could prevent these annual plants from completing their life cycles. If these species are present in the impact area, impacts would be significant. July surveys will confirm whether these species are present.

Indirect impacts to either of these vernal pool species would occur if construction of the transmission line towers altered the flow of water into a pool which contained either species, to the point where the pool's hydrology could no longer support that species. Tower footings within this area would not block surface flows to any vernal pool habitat. Indirect effects could result if a footing breached some impermeable or semi-permeable subsurface clay or hardpan layer in an area within the watershed of a vernal pool. This could result in more water draining through the impermeable or semi-permeable layer, and less water reaching the pool. This type of impact is unlikely, because there are only a few pools in the area affected, their likelihood of supporting these plants is low, and the indirect effects described should be easily avoidable by careful siting of the transmission line towers. Although the type of impact described could be significant, this is less likely based on the small size of the tower footings and the limited effect they could actually have on pool hydrology.

8.2.2.2.2 Other Special-Status Plant Species

Based on the results of plant surveys conducted to date, vernal pool smallscale (*Atriplex depressa*) is the only other special-status plant species that may be present in the proposed project area. If present, this species may not be detectable until as late as July. Impacts to *A. depressa*, if present in vernal pools in the project area, would be similar to those described in the previous subsection for threatened and endangered plants.

8.2.2.2.3 Threatened and Endangered Wildlife Species

Swainson's Hawk

CDFG considers loss of foraging habitat for Swainson's hawks within a 10-mile radius of an active nest as an impact to this species. Nests are considered active if they have been used at least once during the last five years (CDFG, 1994). Based on these guidelines, the proposed project would result in a loss of Swainson's hawk foraging habitat. Loss of foraging habitat is one factor contributing to the decline of this species. Therefore, this would be a significant impact to Swainson's hawk.

A number of project features would contribute to the loss of Swainson's hawk foraging habitat. Some of the habitat loss would be permanent, such as the loss of 29.1 acres of grasslands within the footprint of the power generation facility, switchyard, plant access road, and proposed transmission line interconnection. Associated with these permanent habitat losses are habitat disturbances associated with constructing these facilities. Of the habitat disturbances, some would be purely temporary in nature, such as disturbance of grassland habitat during construction of the water supply pipeline to the Tehama-Colusa Canal, and disturbance immediately outside of the footprint of the above-listed permanent features that would occur during construction. The proposed project would result in purely temporary disturbance to approximately 49.5 acres of grassland habitat suitable for Swainson's hawk foraging, as described on Table 3.6-3. If the PG&E Compressor Station repowering option is constructed, an additional 1.15 acres of temporary disturbance associated with the duct bank from the switchyard to the compressor station site would also occur.

Other disturbances that are somewhat temporary in nature may have a long-lasting effect on grassland habitat in the project area. The proposed 35-acre construction laydown area would be extensively graded and covered with a layer of rock. This area would not be used after project construction is complete, and efforts to restore this area would include removing the rock, relieving the soil compaction, and replanting. If this area is replanted with an appropriate mix of native plants, some species that provide high quality forage for small mammals are used, and the plants are able to become established before the weeds take

over, then this area would still be useful as Swainson's hawk foraging habitat after project completion. Regular use of an access route underneath the proposed transmission line interconnection for maintenance purposes may also result in lasting degradation of approximately 4.1 acres of grassland habitat.

Bald Eagle

Grassland habitat moderately suitable for bald eagle foraging would be affected by the proposed project. However, relatively speaking, this habitat is probably not very important to bald eagles, which prefer to forage over water. The proposed project would result in the permanent loss of approximately 29.1 acres of grassland habitat and temporary disturbance to 49.5 acres of grassland habitat. If the PG&E Compressor Station repowering option is constructed, an additional 1.15 acres of temporary disturbance associated with the duct bank from the switchyard to the compressor station site would also occur. Because bald eagles' preferred foraging habitat consists of large water bodies, this impact would be less than significant.

Giant Garter Snake

Placement of gravel along the east side of Delevan Road, both north and south of the intersection with McDermott, could affect the giant garter snake. If snakes lie inactive in holes, cracks, or burrows in the area where gravel would be placed, individual snakes could be harmed. The potential for the snake to be harmed increases if work would be conducted during its inactive season (October-April).

Bridge work at the Teresa Creek Bridge has the potential to affect the giant garter snake. The temporary detour to be used while the bridge is under construction would be constructed through rice fields that may support giant garter snakes. Although the flow of water in Teresa Creek may be more rapid than preferred by giant garter snakes for foraging, the stream's location between two rice fields and the lack of riparian vegetation increase the likelihood that the snake may occur here. Based on the presence of suitable habitat, any disturbance of this habitat could result in harm, injury, or direct mortality of giant garter snakes. The potential for the snake to be harmed increases if work would be conducted during its inactive season (October-April).

During construction of the proposed plant, traffic on roadways between I-5 and the plant site will increase more than 100 percent, with an expected peak of 441 daily construction round trips, lasting for a period of a few months, and average daily construction round trips of 221 over a two-year construction period. Road-kill may be a major factor contributing to the mortality of giant garter snakes in the project vicinity, because they may bask on roadways that often border suitable aquatic habitat. Many of the roadways leading from I-5 to the proposed plant site are bordered by rice fields and irrigation ditches. Snakes may come up onto the roadway and be killed by traffic. If snakes occur in these ditches, this type of mortality likely occurs with some regularity. Because traffic on these roadways is expected to more than double during construction, increased traffic would likely result in a significant increase in giant garter snake mortality along roadways bordered by aquatic habitat between I-5 and the proposed plant site.

Salmonids

Replacement of the Teresa Creek Bridge could significantly impact chinook salmon, including the Central Valley spring run ESU, the Central Valley fall/late-fall run ESU, and the Sacramento Valley winter run ESU, depending upon the timing of construction and the manner in which the work is carried out. Central Valley steelhead are also sometimes present in this stream, and they also could be significantly affected. Construction has the potential to impede the movement of fishes from one side of the project area to the other, particularly if work must be conducted in the active channel. Although no piers or other structures associated with the proposed bridge would be built in the channel, a temporary crossing (detour) on the east side of the existing bridge would require placement of culverts and temporary fill in the channel. Anadromous fishes are more likely to be affected by obstructions in the channel, because they must move

upstream and downstream at certain times of the year. If construction on the Teresa Creek Bridge were to occur during a period when fishes were either moving upstream or downstream, bridge work would potentially create a migratory barrier that could interfere with the reproductive success of adult listed salmonids, or could decrease the survivorship of juveniles.

There also is some potential for construction of the wall that would be used to control erosion on the north bank of Teresa Creek, just west of the bridge, to impact salmonids. During construction of this wall, it may be necessary to construct a cofferdam and dewater a small portion of the channel, where the foot of the wall would lie. If juvenile salmonids are present within this area of dewatering, they would be subject to injury or mortality during the dewatering process. This would be a significant impact.

Removal of vegetation from the immediate edges of the tributary to Hunters Creek during bridge work could adversely affect native fish species, including salmonids (salmon and steelhead). Vegetation growing within 2 feet of the river may hang over the river, and can provide valuable cover and shade for fishes. This is particularly important for steelhead, which may remain in the river for extended periods of time. Steelhead may depend on the shade provided by overhanging vegetation to keep cool during the summer months. This cover may also be important for out-migrating juvenile Chinook salmon. Streamside vegetation in the project area is low growing and provides minimal shade. The proposed project would result in temporary disturbance to no more than 100 linear feet of wetland vegetation bordering Teresa Creek. This may adversely affect salmon and steelhead, although there would be little to prevent the small number of affected fishes from moving to similar habitat at other locations. Therefore this impact would be less than significant.

Branchiopods

Although well away from the heart of the vernal pool complex, the location where the transmission lines would tie in to the existing transmission lines is on the periphery of the pool complex (Figure 8.2-3A). This area does contain a few scattered vernal pools at low density. Direct impacts to vernal pools will be avoided, as described in Section 5.1 of the project description. However, tower footings could indirectly affect the hydrology of some pools, thereby affecting branchiopods that may inhabit them. The tower footings would be only 4 to 8 inches in diameter, and would not block surface flows to any branchiopod habitat. Indirect effects could result if a tower breached some impermeable or semi-permeable subsurface claypan layer in an area within the watershed of branchiopod habitat. This could result in more water draining through the impermeable or semi-permeable layer, and less water reaching the branchiopod habitat. Because branchiopod species are linked to hydrology, significant changes in hydrology could cause the elimination of branchiopod populations. However, the pool density in the area that would be affected by the transmission line towers is very low. Additionally, the tower footings are small enough that even if a footing did breach the claypan layer in the watershed of a pool, the amount of water that did not reach the pool would be negligible. Although the exact locations for towers have not yet been selected, it should be possible to locate the towers in a manner that completely avoids all direct and indirect impacts to listed branchiopod species. However, if for some reason the type of indirect impact described above is not avoidable, it would be significant.

8.2.2.2.4 Other Special-Status Wildlife Species

San Joaquin Pocket Mouse

The proposed power plant could result in the loss of some grassland habitat potentially occupied by the San Joaquin pocket mouse. However, if present, this species probably only inhabits some portions of grassland habitat in the project vicinity, and is not likely present throughout it. The proposed project would not likely threaten the continuing existence of this species in the project vicinity, if it occurs there. This potential impact would be less than significant.

Bats

Although the proposed project will not likely impact any important bat roost habitat, the development of the proposed plant would decrease the available habitat over which bats in the project vicinity may forage. However, the project will have relatively little effect on aquatic habitat that likely provides the greater quantity of forage for bats. This potential impact would be less than significant.

Western Burrowing Owl

Significant impacts to burrowing owls would occur within grasslands in the project area. Several active burrows were observed in this area during March 2001, and a burrowing owl was observed within the 200-acre parcel during April 2001. Direct impacts may include mortality to individual owls from destruction of nesting and wintering burrows during construction. Development of the proposed plant could displace individual owls and would reduce suitable foraging habitat. Destruction or degradation of burrows, or destruction or degradation of foraging habitat within 350 feet of occupied burrows are considered impacts to this species (CDFG, 1995).

The proposed project would result in the permanent loss of approximately 29.1 acres of grassland habitat suitable for foraging and nesting burrowing owls, degradation of approximately 39.1 acres of habitat, and temporary disturbance to an additional 10.4 acres of suitable habitat. If the PG&E Compressor Station repowering option is constructed, an additional 1.15 acres of temporary disturbance associated with the duct bank from the switchyard to the compressor station site would also occur. Impacts to suitable habitat would occur at the same locations as those described above for Swainson's hawk. Surveys to be conducted during the breeding and wintering seasons of 2001 will document how many owls and how much foraging habitat adjacent to occupied burrows will be affected.

Indirect impacts to nesting and foraging burrowing owls would extend 250 feet out from the limits of construction during the breeding season (February 1 through August 15) and 160 feet during the wintering season as outlined in CDFG (1995) guidelines. Noise and visual disturbance from construction and operation of the plant may displace owls nesting within these distances from the plant. Construction and operation of the plant may decrease the reproductive success of individual pairs if the disturbance causes adults to decrease foraging activities. Habitat fragmentation may decrease the foraging success of burrowing owls.

Horned Lark

Horned larks have been observed in the proposed project area. The proposed project would result in the permanent loss of approximately 29.1 acres of grassland habitat suitable for foraging and nesting horned larks, degradation of approximately 39.1 acres of habitat, and temporary disturbance to an additional 10.4 acres of suitable habitat. If the PG&E Compressor Station repowering option is constructed, an additional 1.15 acres of temporary disturbance associated with the duct bank from the switchyard to the compressor station site would also occur. Impacts to suitable habitat would occur at the same locations as those described above for Swainson's hawk. If horned larks are nesting in the project area during construction, impacts could include the direct mortality of young or the abandonment of nest sites. These impacts would be significant.

Swallows

Construction of the new Teresa Creek Bridge is currently anticipated to occur during the nesting season for cliff swallows (April to August). Cliff swallows are known to nest under the bridge, and potential impacts to these nesting birds may include destruction of nest sites, abandonment of nest sites, and mortality of young. These types of impacts would be significant.

Other Bird Species of Concern

A number of special-status bird species may be less-than-significantly affected by the loss of grassland habitat that would be associated with development of the proposed plant.

Special-status bird species that may forage year-round over the project site and would be affected by the loss of grassland habitat include the prairie falcon (*Falco mexicanus*), peregrine falcon (*Falco peregrinus anatum*), northern harrier (*circus cyaneus*), and loggerhead shrike (*Lanius ludsricianus*). The merlin (*Falco columbarius*), golden eagle (*Aguila chrysaetos*), ferruginous hawk (*Buteo regalis*), short eared owl (*Asio flammeus*), Vaux's swift (*Chaetura vauxi*), and purple martin may forage seasonally over the project site and may also be adversely affected by the grassland habitat loss.

Western Spadefoot

If the western spadefoot is present in the project area, it could be affected by loss of grassland habitat. Spadefoots may use grasslands in the project area, mainly for dispersal between more suitable habitats during rainy periods. However, the proposed project would not isolate any areas of suitable breeding habitat from each other. The proposed project would not directly affect any suitable spadefoot breeding habitat. This potential impact would be less than significant.

Coyote

Although not a special-status species, coyotes (*Canis latrans*) and other non-game mammals are protected under Fish and Game Code. A recently excavated coyote den was observed within the footprint of the proposed plant site on March 27, 2001. If coyote dens in the project area are disturbed while occupied, particularly if pups are present, direct mortality could occur. This potential impact would be less than significant.

8.2.2.3 Other/Operational Effects of the Proposed Project on Biotic Resources

Operation of the proposed plant, as well as some plant features not yet addressed, would have some additional effects on biological resources. These impacts are described below. If the compressor station repowering option is selected, habitat impacts inside the compressor station would depend upon the final configuration designated by PG&E. Impacts associated with this option, if any, would be mitigated to less-than-significant levels by incorporating the mitigation measures in Section 8.2.4.

8.2.2.3.1 Noise

The plant will produce some noise both during construction and operation as described in Section 8.5. Although much of the land surrounding the proposed plant site is undeveloped, some existing background noise is generated by the PG&E Compressor Station. Noise may cause slight disturbance of wildlife using nearby areas, including Swainson's hawks, horned larks and migratory bird species. However, wildlife would become accustomed to habitual noise associated with plant operation. Impacts would be less than significant.

8.2.2.3.2 Electrocuting Hazard

Additional transmission lines on the site would increase collision and electrocution hazard for raptors. Although the potential for electrocution exists if birds collide with transmission lines or if raptors perch on towers in such a manner as to complete an electrical contact (touching two or more live electrical conductors or a live conductor and a grounded surface), electrocution is unlikely to occur on these proposed transmission lines. The conductor distance between conductors or between conductors and the ground wire is such that it is unlikely a bird could complete a circuit and be electrocuted. The

transmission lines to be constructed for this project will have a minimum distance greater than the wingspan of any birds in the area. Electrocution is a hazard on smaller distribution lines where the lower voltages allow less separation between conductors. Therefore, no significant impacts are expected with regard to bird electrocutions at transmission line routes.

8.2.2.3.3 Collision Hazard

The proposed transmission line interconnection addressed above with respect to electrocution hazard could also pose some collision hazard to avian species that may simply fly into the lines. Less than 1 mile of new transmission lines would be installed, and they would connect to an existing transmission line. The new segment would be located in an area that does not bisect important waterfowl feeding or resting areas. The significance of this impact has not yet been determined. This determination will be made following discussion with the USFWS.

The 150-foot-high HRSG stacks would also increase collision potential for avian species. The potential for collisions would be highest for migrating waterfowl or other species of birds, especially small insect-eaters that migrate at night. In many cases, birds migrating at night are guided in part by constellations and can become confused by brightly lighted tall structures. Fog or low cloud cover can further add to collision potential, although fog does not occur with much frequency in the project area. The stacks would not be adjacent to aquatic habitats that attract large numbers of migratory birds. Although the number of potential collisions cannot be quantified, collisions would likely occur relatively infrequently. This impact would be less than significant.

8.2.2.3.4 Air Pollutant Emissions

The proposed plant is a dry-cooled plant, and no cooling tower drift is associated with this type of plant. Emissions from the proposed plant are not expected to significantly affect biological resources surrounding the project area. Potential pollutant stack emissions include carbon monoxide (CO), inhalable particulates (PM₁₀), and oxides of nitrogen and sulfur (NO_x and SO₂). No pollutant emissions are predicted to result in concentrations that exceed the applicable U.S. EPA prevention of significant deterioration (PSD) significant impact levels for either short-term or annual averaging periods for CO, PM₁₀, NO₂, and SO₂. Biological resources that could be affected by stack emissions are discussed in Section 8.2.1.

Carbon monoxide is a normal constituent of the plant environment, and plants can both metabolize and produce CO. Few studies on thresholds for detrimental effects on vegetation have been conducted, with most studies involving relatively high CO concentrations (above 100 parts per million [ppm]). There are no known detrimental effects on green plants due to CO at the natural global background concentrations of 10 to 230 micrograms per cubic meter (µg/m³) (U.S. EPA, 1979).

Zimmerman et al. (1989) exposed a variety of plant species to CO at concentrations of 115,000 µg/m³ to 11,500,000 µg/m³ from 4 to 23 days. While practically no growth retardation was noted in plants exposed at the lower level, retarded stem elongation and leaf deformation were observed at the higher concentrations. Other studies have shown that pea and bean seedlings also exhibited abnormal leaf formation after exposure to CO at 27,000 µg/m³ for several days (U.S. EPA, 1979). Low levels of CO in the soil have been shown to inhibit nitrogen fixation. Concentrations of 113,000 µg/m³ have been shown to reduce nitrogen fixation, while 572,000 to 1,142,000 µg/m³ result in nearly complete inhibition.

Maximum predicted 1-hour and 8-hour CO emissions have been calculated from the stack. The maximum predicted 1-hour CO concentration is 506.8 µg/m³. Adding this impact to the maximum 1-hour CO background concentration of 8,354 µg/m³ measured at the Yuba City (California) monitoring station results in a total predicted 1-hour CO concentration of 8,861 µg/m³. This figure is significantly less than the CO concentration of 115,000 µg/m³ determined to result in minimal growth retardation in plants, as

well as the $113,000 \mu\text{g}/\text{m}^3$ concentration found to result in slight reduction of nitrogen fixation. Therefore, predicted CO emission levels from the plant are not expected to result in any adverse effects on vegetation.

Sulfur Dioxide and Nitrogen Oxides are the major pollutants of concern that would be found in the gaseous emissions of the proposed project. Sulfur dioxide tends to convert to sulfite and sulfate during chemical transformation in soils. Interpretation of the results of investigations published to date has engendered considerable controversy due to the complexity of terrestrial ecosystems. However, the effects of acidified precipitation containing sulfate (SO_4) on terrestrial ecosystems have been investigated with respect to alteration of soil chemistry as it relates to vegetation health. High levels of SO_4 may induce reduction of the soil pH, decrease the availability of certain essential nutrients and increase the concentrations of soluble aluminum, which reduces plant growth.

In soils where nitrate-nitrogen is not limiting plant growth, excess nitrate may percolate through the soil column, carrying base cations and exerting an acidifying effect. Increased atmospheric contributions of nitrate may influence vegetation in a species-specific way, with some species taking advantage of its fertilizing characteristics while others (such as those occurring in nitrogen-limited soils) are adversely affected. The pH levels of the soils prior to site operation are an important factor in determining the chemical changes that would take place during plant operation. The types of soils that occur in the site vicinity are presented on Figure 8.9-1 in Section 8.9 and their relevant properties are tabulated in Table 8.9-1; pH values shown on this table range between 6.3 and 7.4, suggesting that the level of gas emissions (SO_2/NO_x) predicted for this project would not significantly affect the pH levels of soils.

Sulfur is a major plant nutrient and can be directly absorbed into the soil. Therefore, an increase in SO_2 in the soil (particularly at levels below threshold limits) would not be expected to have an adverse effect on vegetation. However, SO_2 can affect vegetation directly (as a gas) or indirectly by means of its principal reaction product, sulfate (e.g., acidification of soils). In addition, a third mechanism of impact is the formation of acid mist. Direct effects of injury can be manifested as foliar necrosis, decreased rates of growth or yield, predisposition to disease, and reduced reproductive capacity. Environmental factors such as temperature, light, humidity, and wind speed influence both the rate of gas absorption and the plant physiological response to absorbed quantities. High humidity results in a higher absorption rate of gases by plants. Exposure duration and frequency are also important factors that determine the extent of injuries.

Guidelines for air emission impact assessment provided in the technical literature are diverse and threshold dosages causing injury are extremely variable. This is due to the variety of factors affecting plant responses to phytotoxic gases. Consequently, in cases where emissions are below lower threshold limits, decreased yields can result in the absence of visible injury (Sprugel et al., 1980) and long-term impacts should be addressed.

Among the different published attempts to define thresholds for vegetation effects, two represent worst-case situations. Loucks et al. (1980) presented threshold ranges between $131 \mu\text{g}/\text{m}^3$ and $262 \mu\text{g}/\text{m}^3$. McLaughlin (1981) suggests values of $1,310 \mu\text{g}/\text{m}^3$ for a 1-hour average and $786 \mu\text{g}/\text{m}^3$ for a 3-hour average. According to the dose-injury curve for SO_2 -sensitive plant species provided by the USFWS (1978), the lowest 3-hour concentration expected to cause injury to plants is approximately $390 \mu\text{g}/\text{m}^3$. However, these predicted values are applicable only when plants are growing under both the most sensitive environmental conditions and stage of maturity. Thresholds for chronic plant injury by SO_2 have been estimated at about $130 \mu\text{g}/\text{m}^3$ on an annual average. The maximum annual average SO_2 concentration estimated for this project ($0.04 \mu\text{g}/\text{m}^3$) is far below the USFWS threshold for chronic exposure, and the worst-case projected 3-hour maximum of about $59.2 \mu\text{g}/\text{m}^3$ is substantially below the McLaughlin protection level of $786 \mu\text{g}/\text{m}^3$. Consequently, the projected concentration of SO_2 is not expected to cause visible foliar injury or significant adverse chronic effects.

Nitrogen dioxide is potentially phytotoxic, but generally at exposures considerably higher than those resulting from most industrial emissions. Exposures for several weeks at concentrations of 280 to 490 $\mu\text{g}/\text{m}^3$ can cause decreases in dry weight and leaf area, and 1-hour exposures of at least 18,000 $\mu\text{g}/\text{m}^3$ are required to cause leaf damage. The predicted maximum annual average of NO_2 of 0.46 $\mu\text{g}/\text{m}^3$ is far below these threshold limits (219.0 $\mu\text{g}/\text{m}^3$ or 0.1169 ppm). In addition, the total predicted maximum 1-hour NO_2 concentration of 283.9 $\mu\text{g}/\text{m}^3$ would be significantly smaller than the 1-hour threshold (7,500 $\mu\text{g}/\text{m}^3$ or 3,989 ppm) for 5 percent foliar injury to sensitive vegetation (U.S. EPA, 1991). This indicates that NO_2 concentrations, when considered in the absence of other air pollutants, would not adversely affect vegetation.

Airborne Particulates (PM_{10}) can affect vegetation through either physical or chemical mechanisms. Physical mechanisms include the blocking of stomata so that normal gas exchange is impaired, as well as potential effects on leaf adsorption and reflectance of solar radiation. Information on physical effects is scarce, presumably in part because such effects are slight or not obvious except under extreme situations (Lodge et al., 1981). Studies performed by Lerman and Darley (1975) concluded that particulate deposition rates of 365 grams per square meter per year ($\text{g}/\text{m}^2/\text{year}$) caused damage to fir trees, but rates of 274 $\text{g}/\text{m}^2/\text{year}$ and 400-600 $\text{g}/\text{m}^2/\text{year}$ did not damage vegetation at other sites.

The maximum annual predicted concentration for PM_{10} from the proposed plant is 0.50 $\mu\text{g}/\text{m}^3$. Assuming a deposition velocity of 2 cm/sec (worst-case deposition velocity as recommended by the California Air Resources Board [CARB]), this concentration converts to an annual deposition rate of 0.3 $\text{g}/\text{m}^2/\text{year}$. This is three orders of magnitude below that which is expected to result in injury to vegetation (i.e., 365 $\text{g}/\text{m}^2/\text{year}$). The addition of the maximum predicted annual particulate deposition rate for the proposed plant when added to the maximum background concentration of 38.4 $\mu\text{g}/\text{m}^3$, measured at the Yuba City (California) monitoring station yields a total estimated particulate deposition rate of 25 $\text{g}/\text{m}^2/\text{year}$ using the 2 cm/sec factor. This total is still approximately one order of magnitude less than levels expected to result in plant injury.

The primary chemical mechanism by which airborne particulates cause injury to vegetation is by trace element toxicity. Many factors may influence the effects of trace elements on vegetation, including temperature, precipitation, soil type and plant species (USFWS, 1978). Trace elements adsorbed to particulates emitted from power plant emissions reach the soil through direct deposition, the washing of plant surfaces by rainfall, and the decomposition of vegetation. Ultimately, the potential toxicity of trace elements that reach the root zone through leaching will be dependent on whether the element is in a form readily available to plants. This availability is controlled in part by the soil cation exchange capacity, which is determined by soil texture, organic matter content and kind of clay present. Heavier clayey soils will have higher cation exchange capacities than silty or sandy soils. Soil pH is also an important influence on cation exchange capacity. In acidic soils, the more mobile, lower valence forms of trace metals usually predominate over less mobile, higher valence forms.

Perhaps the most important consideration in determining toxicity of trace elements to plants relates to existing concentrations in the soil. Several studies have been conducted relating endogenous trace element concentrations to the effects on biota of emissions from model power plants (Dvorak et al., 1977; Dvorak and Pentecost et al., 1977; Vaughan, et al. 1975). These studies revealed that the predicted levels of particulate deposition for the area surrounding the model plant resulted in additions of trace elements to the soil over the operating life of the plant, which were, in most cases, less than 10 percent of the total existing levels. Therefore, uptake by vegetation could not increase dramatically unless the forms of deposited trace elements were considerably more available for some unusual reason than normal elements present in the soil.

8.2.3 Cumulative Impacts

A natural gas storage and transportation project that would affect biological resources in the vicinity of the proposed Reliant project has been proposed by Wild Goose. The Wild Goose project involves linking an independent gas storage provider, Wild Goose, to the PG&E Backbone System, located at the PG&E Compressor Station. Twenty-five miles of pipeline will be installed and connected to the PG&E lines by a Line 400 Interconnect Site. The Interconnect site is approximately 30 by 49 meters (100 by 160 feet) wide and located south of the PG&E Compressor Station, south of the existing PG&E access road. A staging area of the same size will be located north of this site, but still south of the access road. The primary habitat that would be impacted as a result of the interconnect site are grasslands interspersed with vernal pools. Three vernal pools approximately 3.5 by 3.5 meters (12 by 12 feet) are located in the project area but these will be avoided.

The proposed power plant project would significantly affect Swainson's hawk foraging habitat, and could potentially significantly affect vernal pool wetlands and vernal pool special-status species, all of which may also be affected by the proposed Wild Goose project. Development of a gas interconnection site for the proposed Wild Goose project adjacent to the Colusa Power Plant project area would result in the additional loss of grasslands in the area. This area provides foraging habitat for Swainson's hawk and may potentially impact the special-status plant species and other special-status wildlife species described in this document that occupy and forage around the project site. Gas supply lines could potentially affect additional grasslands and vernal pools.

Additionally, both projects would contribute to the loss of grassland habitat throughout the Central Valley. This ecosystem provides habitat for special-status species such as Swainson's hawk, fairy shrimp, and burrowing owl, in addition to many others. Over time, the continued development of Central Valley habitats has led to increased habitat loss and fragmentation of the ecosystem, resulting in the loss of large vernal pool complexes and other habitats, and the species which depend upon them. Habitat fragmentation has enabled the invasion of exotic species, which often contribute to the decline of Central Valley natives. Although both the proposed Colusa Power Plant and the proposed Wild Goose project would contribute to these types of effects, all of the Colusa Power Plant project-related contributions to cumulative impacts would be mitigated to less-than-significant levels.

The Department of Water Resources (DWR) and the CALFED Bay-Delta Program (CALFED) have proposed to construct a new reservoir in the Sacramento Valley, which would be known as Sites Reservoir. The Sites off-stream storage project would be located approximately 10 miles west of Maxwell in Antelope Valley (NCWA, 2001). This site is located approximately 7 miles southwest of the proposed Colusa Power Plant site. Sites Reservoir would be an off-stream reservoir that would be filled primarily by pumped diversions from the Sacramento River. Water would be diverted into the reservoir during peak flow periods in winter months. To minimize potential impacts of existing diversions on Sacramento River fisheries, Sites Reservoir would release water back into valley conveyance systems in exchange for water that would otherwise have been diverted from the Sacramento River. This undiverted summer water could become available for other uses. DWR and CALFED are continuing to analyze two projects of different sizes: (1) Small Sites – 1.2 million acre-feet (MAF) and (2) Large Sites – 1.9 MAF. The more favored 1.2 MAF facility would provide a 300,000 acre-foot annual yield. Although potential impacts to biological resources that would result from this project have not been analyzed yet, resources at the site may be similar to those in the Colusa Power Plant project area. Habitat at the site consists of grasslands, and some of the same species affected by the proposed power plant project would likely be affected by the proposed Sites Reservoir project. However, impacts related to the proposed power plant project would be mitigated to less-than-significant levels.

8.2.4 Mitigation Measures

Impacts to biotic resources and corresponding mitigation measures are summarized in Table 8.2-6 and discussed below. The following subsections describe the mitigation measures that would reduce all project-related impacts to biotic resources to less-than-significant levels.

8.2.4.1 Wetlands

BIO-1 Teresa Creek Revegetation

Vegetation disturbed at Teresa Creek during the bridge replacement will be replanted with appropriate native species, such as mugwort (*Artemisia douglasiana*), *Leymus triticoides* and meadow barley (*Hordeum brachyantherum*). If required, the Applicant will submit a pre-construction notification to the U.S. Army Corps of Engineers. This will reduce impacts to a less-than-significant level.

8.2.4.2 Special-Status Species

8.2.4.2.1 Special-Status Plant Species

Based on surveys conducted to date, no special-status plant species would be impacted by the proposed project. Additional rare plant surveys will be conducted in July.

BIO-2 Rare Plant Avoidance

If special-status plant species are present in the area that would be affected by the proposed transmission line interconnection, impacts to the plants will be avoided. Avoidance measures could include relocating tower footings, fencing areas for avoidance during construction, and use of hay bales and silt fences to prevent sedimentation in areas that contain the plants. It is anticipated that these measures would be sufficient to avoid impacts to any special-status plant species that may be present.

8.2.4.2.2 Threatened and Endangered Wildlife Species

Swainson's Hawk

Mitigation measures recommended by CDFG (1994) are intended to reduce a project's impact to Swainson's hawks to less-than-significant levels. Mitigation ratios are based on the distance from the project site to the closest active nest site, as follows:

- Projects within 1 mile of an active nest tree shall establish offsite habitat management lands through fee title acquisition or a conservation easement on suitable foraging habitat (1:1 ratio); or one-half acre that allows for the active management of the habitat for prey production (0.5:1 ratio).
- Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall provide habitat management lands at a 0.75:1 ratio.
- Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide habitat management lands at a 0.5:1 ratio.

BIO-3 Swainson's Hawk Habitat Replacement

Based on the nests observed within 5 miles of the project area during 2000 (CDFG, 2001), and the negative results of the survey conducted within 1 mile of the plant site, the proposed project would require mitigation lands at a ratio of 0.75:1 (3/4 of an acre for every 1 acre developed). The total project

site would include 16.6 acres occupied by the power generation facility, 10.6 acres occupied by the switchyard, 1.7 acres occupied by the plant access road, and 0.2 acre occupied by the aboveground portion of the proposed transmission interconnection, for a total of 29.1 acres. Therefore, 21.83 acres of mitigation lands would be required. If construction begins after April 1, 2002 pre-construction surveys will be conducted to make sure that no Swainson's hawks have established nests within 1 mile of the plant site. If possible, access to the private property within 1 mile of the plant site that was not surveyed in 2001 should be obtained, so that the parcel can be included in the survey. This mitigation would reduce impacts to Swainson's hawk to less-than-significant levels, and would benefit other avian species that may forage over grasslands in the project area, including bald eagle, horned lark, prairie falcon, peregrine falcon, northern harrier, loggerhead shrike, merlin, golden eagle, ferruginous hawk, short-eared owl, Vaux's swift, and purple martin.

Giant Garter Snake

Implementation of the "reasonable and prudent measures" described by the USFWS (1997) are necessary and appropriate to minimize the potential for incidental take of giant garter snakes during the Teresa Creek Bridge replacement and during placement of gravel along the east side of Delevan Road.

BIO-4 Construction Requirements in Giant Garter Snake Habitat

The following measures are proposed to minimize the potential for take of this species during construction associated with the bridge replacement. Implementation of these measures would reduce the impacts to the giant garter snake, during the Teresa Creek Bridge replacement and during placement of gravel along the east side of the Delevan Road/McDermott Road intersection, to less-than-significant levels:

- All construction activity associated with the bridge replacement will be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct impacts are lessened because snakes are actively moving and avoiding danger.
- Any dewatered habitat must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling the dewatered habitat.
- Construction personnel involved in the bridge replacement and associated work will participate in a USFWS -approved worker environmental awareness program. Workers will be informed about the presence of the giant garter snake and that unlawful take of the animal or destruction of its habitat is a violation of the ESA. A qualified biologist shall instruct the construction personnel about (1) the life history of the snake; (2) the importance of irrigation canals, wetlands, and seasonally flooded areas such as rice fields, to the giant garter snake; and (3) the terms and conditions of any agreement reached with the USFWS.
- Clearing of vegetation from the stream will be confined to the minimal area necessary to excavate toe of bank for fill placement.
- Areas designated for avoidance will be clearly marked as environmentally sensitive and avoided by all construction personnel.
- A qualified biologist will inspect the work area within 24 hours prior to commencement of construction activities. The monitoring biologist will be available thereafter, and if a snake is encountered during construction, the monitoring biologist shall have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake will not be harmed.

- After construction, any temporary fill or debris shall be removed and wherever feasible, disturbed areas will be restored to pre-project conditions.

The following measure is proposed to minimize the potential for increased traffic on roadways between the proposed plant site and I-5 to result in an increased incidence of road-killed giant garter snakes. Implementation of this measure would reduce this impact to a less-than-significant level.

BIO-5 Road-Kill Avoidance

Construction speed limits of 20 miles per hour are proposed to minimize the potential for increased traffic volumes to result in an increased incidence of road-kill of giant garter snakes during project construction. These construction speed limits would be posted on all roadways leading between I-5 and the proposed plant site, and all traffic to and from the plant site would be required to obey the speed limit. These signs, or other signs posted along the same route, would alert drivers to the potential presence of snakes. Additionally, a worker awareness program would be used to inform all workers of the need to watch for and avoid snakes that may be present along roadways. This program would require that drivers entering the project site are provided with an informational handout. This would reduce the potential for construction traffic to impact giant garter snakes to a less-than-significant level.

Salmonids

BIO-6 Construction Requirements in Salmonid Habitat

In-stream bridge work at Teresa Creek will be limited to the period between June 1 and September 15, to minimize or avoid impacts to migrating salmonids. During construction, adequate flows allowing for fish passage will be maintained at all times. If culverts are installed to provide a temporary crossing during construction (a detour), they will be large enough so as not to restrict peak expected flows. If dewatering of some area is required during construction, a qualified biologist will be present during the dewatering, to ensure that fish are not injured. Fish that may be trapped behind the cofferdam will be netted and removed from the dewatering area. Additionally, a net or some other type of fish screen will be used on the end of the dewatering pump, to prevent any fish from being sucked into the pumping mechanism, providing the biologist with adequate opportunity to remove the fish from the area. All disturbed areas will be revegetated, including disturbed areas adjacent to the active channel. These measures would reduce the impact to salmonids to a less-than-significant level.

Branchiopods

Because protocol surveys intended to determine presence or absence of special status branchiopods in the study area have not been conducted, the presence of the vernal pool fairy shrimp, Conservancy fairy shrimp, and vernal pool tadpole shrimp is assumed. The presence of these three species is assumed in all vernal pools that have vernal pool vegetation well developed enough to indicate that ponding may occur at a duration and frequency sufficient to support fairy shrimp.

All direct impacts to vernal pool habitat will be avoided as described in Section 5.1 of this application. Based on the low density of pools in the area that would be affected by transmission lines, it should be possible to locate transmission line towers to avoid altering the hydrology of any pool to a degree that would adversely affect branchiopod species.

BIO-7 Avoidance or Minimization of Impacts to Branchiopods

Transmission line towers will be located at least 250 feet from any pool likely to support listed branchiopods, or will be located outside of the watershed of any such pools. All pools with potential to be disturbed during construction will be clearly marked and avoided. Measures such as placement of hay

bales or silt fences will be used, if necessary, to prevent sediment from disturbed areas from reaching pools during rainy periods. Final design and construction of the transmission line interconnection will be by PG&E. If for some reason it proves impossible to avoid indirect impacts to potential listed branchiopod habitat, impacts would be mitigated by purchasing credits at the USFWS-approved Dolan Ranch Conservation Bank, operated by Wildlands Incorporated. Credits to mitigate for pools degraded by an altered hydrology would be purchased at a 2:1 ratio for preservation of existing pools and 1:1 for creation of new pools. This would reduce the level of impact to listed branchiopod species to a less-than-significant level.

8.2.4.2.3 Other Special-Status Wildlife Species

Western Burrowing Owl

Early mitigation planning and implementation for burrowing owls would occur because passive trapout can be labor intensive and time consuming in areas of moderate- to high-density ground squirrel activity. In addition, passive trapout activities are restricted to the non-breeding season. Burrowing owls exhibit a high degree of nest site fidelity; therefore, owls trapped out of their burrows are likely to continuously colonize adjacent ground squirrel burrows within the 250-foot buffer zone until all the burrows have been backfilled. Once trapout activities begin, burrows (both with and without signs of burrowing owl use) should not be excavated or backfilled until trapdoors have been installed for 48 hours. This procedure can be very labor intensive.

Avoidance, minimization, and mitigation measures for impacts to burrowing owls will be established in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG, 1995). Adherence to these recommendations will reduce the impact to burrowing owls to a less-than-significant level.

BIO-8 Burrowing Owl Mitigation

Pre-construction burrowing owl surveys will be conducted according to CDFG (1995) protocol during the breeding and wintering seasons of 2001.

Surveys will be conducted within grasslands within the project footprint and within suitable habitat 500 feet from the project footprint. Burrowing owl and burrow surveys will be conducted at least once between April 15 and July 15 and at least once between December 1 and January 31 (CDFG, 1995). The locations of all observed burrowing owls and active burrows will be marked on a map of the project area at a scale sufficient to accurately show the distance of observed owls and active burrows to the limits of construction.

While conducting burrowing owl pre-construction surveys, biologists will note any potentially active coyote dens within the project footprint. To prevent unnecessary mortality, occupied dens will not be disturbed by heavy equipment. It may be necessary to collapse some dens, after ensuring that they are empty, prior to construction.

A mitigation and management plan will include the following CDFG (1995) avoidance, minimization, and mitigation measures for impacts to burrowing owls:

- Occupied burrows will not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFG verifies through noninvasive methods that birds have not begun egg-laying or that juveniles are foraging independently and are capable of independent survival.
- Only passive relocation techniques will be used to remove owls from active burrows located within a 250-foot buffer zone from the project footprint during the non-breeding

season. The passive relocation technique consists of placing one-way doors at each burrow entrance for 48 hours to insure that owls have left the burrow before hand-excavation of the burrows occurs.

- When destruction of occupied burrows is unavoidable, existing unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created by installing artificial burrows at a ratio of 2:1 within suitable habitat adjacent to the buffer zone. Artificial burrows will be monitored daily for one week to confirm owl use of burrows before active burrows are excavated.
- When destruction of occupied burrows is unavoidable to offset the loss of foraging and burrow habitat, a minimum of 6.5 acres of foraging habitat per pair or unpaired resident bird will be set aside and permanently protected. Protected lands will be adjacent to occupied burrowing owl habitat or at a location acceptable to CDFG.

Implementation of these measures would reduce impacts to burrowing owls to less-than-significant levels.

Horned Lark

BIO-9 Horned Lark Nest Surveys

If construction begins during the breeding season (March through July), pre-construction breeding season surveys for horned larks will be conducted within grassland habitat prior to initiating construction in these areas or within 300 feet of these areas. Surveys will be conducted between mid-March and late June, when passerines are expected to have completed nest construction. The Migratory Bird Treaty Act prohibits any action that causes the direct take or destruction of migratory birds or their nests; therefore, surveyors will document the location of all nesting birds within 300 feet of proposed construction activities. If nesting horned larks or other nesting birds protected under the Migratory Bird Treaty Act are located during the pre-construction surveys, disturbance within 300 feet of the nest will not be initiated until a qualified biologist has determined that the young birds can independently feed and protect themselves, or until some other agreement is reached with the USFWS. This will reduce impacts to horned larks to less-than-significant levels.

Swallows

BIO-10 Cliff Swallow Protection

It is anticipated that construction of the Teresa Creek bridge would occur during the nesting period for cliff swallows (April 1 to August 1). If construction will occur during this period, netting will be installed on the bridge, prior to the nesting season, to prevent the occupation of existing nests or the construction of new nests. This netting will be in place before March 1, and will be maintained through the nesting season, or until the existing bridge has been demolished. If construction does not occur during the nesting season, no measures to protect cliff swallows will be necessary. This would reduce impacts to cliff swallows to a less-than-significant level.

Other Avian Species

BIO-11 Avian Collision Avoidance

Mitigation measures to reduce impacts from potential bird collisions with HRSG stacks and other structures include reduction of exterior lighting on all structures. All other required exterior lighting on structures will be shielded to direct light downward. If it is determined that construction of the proposed transmission line interconnection would significantly impact avian species, a “bird flight diverter” will be

used to prevent bird collisions with these structures. This will reduce the potential for birds to collide with structures to a less-than-significant level.

BIO-12 Biological Resources Mitigation Implementation and Monitoring Program

Prior to construction, a Biological Resources Mitigation Implementation and Monitoring Program (BRMIMP) will be prepared. The BRMIMP will include a description of the specific measures necessary to implement the above conditions and will include a description of conditions contained in other biological resources permits.

8.2.5 Laws, Ordinances, Regulations, and Standards

The proposed project will operate in accordance with all laws, ordinances, regulations, and standards (LORS) applicable to biological resources. The following LORS are applicable or potentially applicable to the proposed project in the context of biological resources. Specific locations in the document where these LORS are addressed are indicated in Table 8.2-7.

8.2.5.1 Federal

Endangered Species Act of 1973 and implementing regulations, Title 16 United States Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR 17.1 et seq.)

ESA includes provisions for the protection and management of federally listed threatened or endangered plants and animals and their designated critical habitats. Section 10(1)(A) of the ESA requires a permit to take threatened or endangered species during lawful project activities. If there is not a federal nexus for the project, a Habitat Conservation Plan (HCP) may be necessary. The administering agency for the above authority is the U.S. Fish and Wildlife Service for terrestrial, avian, and most aquatic species, and the National Marine Fisheries Service (NMFS) for anadromous species.

Section 7 of Fish and Wildlife Coordinating Act, 16 USC 742 et seq., 16 USC 1531 et seq., and 50 CFR 17.

This Act requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on federal jurisdiction over some aspect of the project.

The administering agency for the above authority is the U.S. Fish and Wildlife Service (USFWS)

Section 404 of the Clean Water Act of 1977 (33 USC 1251 et seq., 33 CFR §§320 and 323)

This section of the Clean Water Act gives the U.S. Army Corps of Engineers (USACE) authority to regulate discharges of dredge or fill material into Waters of the U.S., including wetlands.

The administering agency for the above authority is the USACE.

Section 401 of the Clean Water Act of 1977

This section of the Clean Water Act requires the Applicant to conduct water quality impact analysis for the project when using 404 permits and for discharges to waterways.

The administering agency for the above authority is the USACE.

Migratory Bird Treaty Act 16 USC §§703-711

This Act includes provisions for protection of migratory birds, including the non-permitted take of migratory birds.

The administering agencies for the above authority are the USFWS and California Department of Fish and Game (CDFG).

8.2.5.2 State

California Endangered Species Act of 1984, Fish and Game Code, §2050 through §2098

This Act includes provisions for the protection and management of plant and animals species listed as endangered or threatened, or designated a candidates for such listing. The Act includes a consultation requirement “to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existences of any endangered or threatened species...or result in the destruction or adverse modification of habitat essential to the continued existence of the species” (§2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.2. Animals of California declared to be endangered or threatened are listed at 14 CCR §670.5.14 CCR §15000 *et seq.* describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.

The administering agency for the above authority is CDFG.

Fish and Game Code Fully Protected Species

§3511: Fully Protected birds

§4700: Fully Protected mammals

§5050: Fully Protected reptiles and amphibians

§5515: Fully Protected fishes

This Code prohibits the taking of listed plants and animals that are Fully Protected in California.

The administering agency for the above authority is CDFG.

Fish and Game Code §1930, Significant Natural Areas

This Code designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools and significant wildlife habitats. These Significant Natural Areas are listed in the California Natural Diversity Database (CNDDB).

The administering agency for the above authority is CDFG.

Fish and Game Code §1580, Designated Ecological Reserves

The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.

The administering agency for the above authority is CDFG.

Fish and Game Code §1600, Streambed Alteration Agreement

This Code reviews projects for impacts on waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.

The administering agency for the above authority is CDFG.

Native Plant Protection Act of 1977, Fish and Game Code, §1900 *et seq.*

This Act designates state rare and endangered plants and provides specific protection measures for identified populations.

The administering agency for the above authority is CDFG.

CDFG Policies and Guidelines, Wetlands Resources Policy

This policy provides for the protection, preservation, restoration, enhancement, and expansion of wetland habitats in California, including vernal pools.

The administering agency for the above authority is CDFG, California Environmental Protection Agency (Cal/EPA), and the Central Valley Regional Water Quality Control Board (CVRWQCB).

Public Resource Code §§25500 & 25527

According to this code, the siting of facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value, is prohibited. If there is no alternative, strict criteria are applied.

The administering agencies for the above authority are the USFWS and CDFG.

Title 20 CCR §§1702 (q) and (v)

This Title protects “areas of critical concern” and “species of special concern” identified by local, state or federal resource agencies within the project area, including the California Native Plant Society (CNPS).

Title 14 CCR Section 15000 *et seq.*

This Title describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.

The administering agencies for the above authority are the USFWS and CDFG.

8.2.5.3 Local

County of Colusa General Plan

The County Plan encourages preservation and management of biotic resources, including special-status species. It puts some planning constraints in sensitive habitat areas but does not supersede CDFG and USFWS requirements.

The administering agencies for the above authority are the USFWS and CDFG.

8.2.6 Involved Agencies and Agency Contacts

This section describes the required permits related to biological resources for the Colusa Power Plant. The following table summarizes these required permits. Additional details on information required for each permit application and where the required information can be found in this document is provided in Table 8.2-8.

| Issue | Agency/Address | Contact/Title | Telephone |
|--|---|---|----------------------------------|
| Red-legged frog | U.S. Fish and Wildlife Service 2800 Cottage Way, E-1803, Sacramento, California 95825 | Jason Davis, Regulatory Biologist | (916) 414-6600 |
| Presence of fish in the Glenn-Colusa canal | Glenn-Colusa Irrigation District 1344 East Laurel Street PO Box 150 Williams, CA 95988 | O.L. (Van) Tenney, General Manager | (530) 934-8881 |
| Special-status species found at the Sacramento NWR Complex | USFWS-Sacramento NWR Complex 752 County Rd. 99 W Willows, CA 95988 | Joe Silveira, Refuge Biologist | (530) 934-2801 |
| Special-status fish in Hunters and Funks Creek | CDFG 1416 Ninth Street, 13th Floor Sacramento, CA 95814 | Terry Roscoe, Fisheries Biologist | (916) 358-2883 |
| Jurisdictional status of agricultural canals | U.S. Army Corps of Engineers 1325 J Street Sacramento, CA 95814-2922 | Matt Kelley, Regulatory Biologist | (916) 557-7724 |
| Swainson's hawk occurrences in CNDDB | CDFG, Natural Heritage Division Natural Diversity Database Fresno, CA | Darlene McGriff, Wildlife Biologist | (916) 322-2494 |
| Swainson's hawk nesting habitat | CNDDB 402 S. Merrill Ave. Willows, CA 95988 | Paul Hofmann, Wildlife Biologist | (530) 934-9309 |
| Cumulative impacts | Colusa County Planning and Building Department 220 12th Street Colusa, CA 95932 | David J. Kelley, Director | (530) 458-0480 |
| Burrowing Owl | CDFG, Region 2 1701 Nimbus Rd., Ste. A Rancho Cordova, CA 95670 | Dan Gifford, Wildlife Biologist | (916) 358-2900 (209) 369-8851 |
| Biological resources | California Energy Commission 1516 9th Street Sacramento, CA 95814 | Rick York, Biologist | (916) 654-3945 |

8.2.7 Permits Required and Permit Schedule

This section describes the required permits related to biological resources for the Colusa Power Plant. The following table summarizes these required permits. Additional details on information required for each permit application and where the required information can be found in this document is provided in Table 8.2-8.

| Responsible Agency | Permit/Approval | Schedule |
|--|---|--|
| U.S. Army Corps of Engineers | Clean Water Act Permit: Nationwide Permit #14 (linear transportation crossings) | 6 to 8 months, including USFWS consultation |
| U.S. Fish and Wildlife Service | Section 7 consultation for listed species or: Section 10 consultation (if the USACE does not take jurisdiction over wetlands containing listed species) | 6 to 8 months |
| National Marine Fisheries Service | Section 7 consultation for listed salmonids | 6 to 8 months |
| California Department of Fish and Game | Streambed Alteration Agreement (1600) for Teresa Creek | 2 to 3 months |
| Regional Water Quality Control Board | 401 Water Quality Certification | 1 month after the USACE issues its authorization |

8.2.8 References

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| Table 8.2-1 Biological Resources Field Surveys | | |
|---|---|---|
| Resource | Field Surveys Completed | Conducted by URS Biologist(s) |
| potential jurisdictional wetlands | wetland delineations conducted on March 26 and 27, April 9 and 10, 2001 | Steve Leach, Corinna Lu, Michelle Lee, Jonathan Stead |
| rare plants | surveys conducted March 26 and 27, April 23, May 11, 2001 | Steve Leach, Corinna Lu, Michelle Lee, Jonathan Stead |
| Swainson's hawk | review of CNDDDB confirms active nest sites within 5 miles of plant site; surveys for nesting hawks within 1 mile of the plant site conducted on April 24, 2001 | Michelle Lee, Corinna Lu |
| branchiopod species | habitat suitability evaluated March 9, 26, and 27, 2001; location of potentially affected habitat established by GPS on May 11, 2001 | Jonathan Stead , Steve Leach |
| burrowing owl | habitat suitability evaluated/active burrows noted March 9, 26, and 27 and April 24, 2001; pre-construction survey May 10 and 11, 2001 | Jonathan Stead, Corinna Lu, Michelle Lee |
| other wildlife species | habitat suitability evaluated March 9, 26, and 27, 2001 | Jonathan Stead, Corinna Lu |

**Table 8.2-2
Plant Species Observed in the Project Area and Immediate Vicinity
(Page 1 of 4)**

| Scientific Name | Common Name | Habitat Type | | | | |
|----------------------------------|---------------------|--------------|-------------------|-------------|---------|--------------------|
| | | Grassland | Seasonal Wetlands | Vernal Pool | Ruderal | Agricultural Ditch |
| <i>Achyrrachaena mollis</i> | blow-wives | X | X | | | |
| <i>Aegilops triuncialis</i> | barbed goatgrass | X* | | | | |
| <i>Amsinckia menziesii</i> | rancher's fireweed | X | | | X | |
| <i>Atriplex fruticulosa</i> | saltbush | X* | | | | |
| <i>Avena barbata</i> | slender wild oat | X | | | | |
| <i>Avena fatua</i> | wild oat | | | | X | |
| <i>Brassica nigra</i> | black mustard | X | | | X | |
| <i>Bromus diandrus</i> | ripgut grass | X | | | X | |
| <i>Bromus hordeaceus</i> | soft chess | X | | | | |
| <i>Calandrinia ciliata</i> | red maids | X | | | | |
| <i>Callitriche marginata</i> | water-starwort | | | X | | |
| <i>Capsella bursa-pastoris</i> | shepherd's purse | X | | | X | |
| <i>Carex</i> sp. | sedge | | X(sp) | | | |
| <i>Centaurea solstitialis</i> | yellow star thistle | X | | | X | |
| <i>Cerastium arvense</i> | field chickweed | X | | | X | |
| <i>Chamomilla suaveolens</i> | pineapple weed | | | | X | |
| <i>Convolvulus arvensis</i> | bindweed | X | | | X | |
| <i>Crassula</i> sp. | | X* | | | | |
| <i>Cressa truxillensis</i> | alkali weed | X* | | | | |
| <i>Cynodon dactylon</i> | bermuda grass | | | | X | |
| <i>Cyperus eragrostis</i> | nutsedge | | | | | X |
| <i>Deschampsia danthonioides</i> | annual hairgrass | | | X | | |
| <i>Dichelostemma capitatum</i> | blue dicks | X | | | | |
| <i>Distichlis spicata</i> | saltgrass | | X | | X | |
| <i>Downingia insignis</i> | harlequin downingia | | | X | | |

**Table 8.2-2
Plant Species Observed in the Project Area and Immediate Vicinity
(Page 2 of 4)**

| Scientific Name | Common Name | Habitat Type | | | | |
|--|-------------------|--------------|-------------------|-------------|---------|--------------------|
| | | Grassland | Seasonal Wetlands | Vernal Pool | Ruderal | Agricultural Ditch |
| <i>Eleocharis macrostachya</i> | spikerush | | X | | | |
| <i>Epilobium brachycarpum</i> | willow herb | | | | X | |
| <i>Erodium botrys</i> | filaree | X* | X | | | |
| <i>Erodium moschatum</i> | filaree | X | | | X | |
| <i>Eryngium vaseyi</i> | | | | X | | |
| <i>Escholzia californica</i> | California poppy | | | | X | |
| <i>Frankenia salina</i> | alkali heath | | | | X | |
| <i>Geranium dissectum</i> | geranium | X | X | | X | |
| <i>Glyceria occidentalis</i> | mannagrass | | X | | | |
| <i>Gnaphalium palustre</i> | cudweed | | | | | X |
| <i>Gratiola heterosepala</i> | hedge-hyssop | | | X | | |
| <i>Grindelia camporum</i> | gumplant | X | | | | |
| <i>Hemizonia fitchii</i> | hemizonia | X | | | | |
| <i>Hordeum histrix</i> | | | X | | | |
| <i>Hordeum murinum</i> | barley | X | | | X | |
| <i>Hordeum murinum</i> ssp. <i>leporinum</i> | barley | | | | X | |
| <i>Juncus (pacificus)</i> | rush | | | | | X |
| <i>Juncus bufonius</i> | toad rush | | | X | | |
| <i>Lactuca serriola</i> | prickly lettuce | | | | X | |
| <i>Lactuca</i> sp. | lettuce | | X(sp) | | | |
| <i>Lasthenia fremontii</i> | goldfields | | | X | | |
| <i>Lepidium latipes</i> | peppergrass | | X | | | |
| <i>Lepidium latipes</i> var. <i>latipes</i> | dwarf peppergrass | X | | | | |
| <i>Lepidium nitidum</i> | peppergrass | | X | | | |
| <i>Leymus triticoides</i> | | | | | X | |

**Table 8.2-2
Plant Species Observed in the Project Area and Immediate Vicinity
(Page 3 of 4)**

| Scientific Name | Common Name | Habitat Type | | | | |
|--|---------------------|--------------|-------------------|-------------|---------|--------------------|
| | | Grassland | Seasonal Wetlands | Vernal Pool | Ruderal | Agricultural Ditch |
| <i>Lilaea scilloides</i> | flowering-quillwort | | | X | | |
| <i>Limnanthes douglasii</i> | meadowfoam | | | X | | |
| <i>Lolium multiflorum</i> | Ryegrass | | X | | X | |
| <i>Lotus corniculatus</i> | birdfoot trefoil | | | | X | |
| <i>Ludwigia peploides</i> | water primrose | | | | | X |
| <i>Lupinus bicolor</i> | miniature lupine | | | | X | |
| <i>Lupinus succulentus</i> | arroyo lupine | X | | | | |
| <i>Lythrum hyssopifolium</i> | | | | X | | |
| <i>Malva</i> sp. | mallow | X | | | | |
| <i>Marrubium vulgare</i> | horehound | | | | X | |
| <i>Medicago sativa</i> | alfalfa | | | | X | |
| <i>Medicago polymorpha</i> | burclover | X | | | | |
| <i>Muilla maritima</i> | common muilla | X | | | | |
| <i>Navarretia leucocephala</i> | | | | X | | |
| <i>Picris echioides</i> | ox-tongue | | X | | X | |
| <i>Pilularia americana</i> | | | | X | | |
| <i>Plagiobothrys greenei</i> | popcornflower | X | X | | | |
| <i>Plagiobothrys nothofulvus</i> | popcornflower | X | | | | |
| <i>Plagiobothrys stipitatus</i> ssp. <i>stipitatus</i> | popcornflower | | X | | | |
| <i>Plantago coronopus</i> | plantain | X* | X | | | |
| <i>Plantago elongata</i> | plantain | | X | | | |
| <i>Poa annua</i> | annual bluegrass | | X | | | |
| <i>Pogogyne zizyphoroides</i> | | | | X | | |
| <i>Polygonum arenastrum</i> | common knotweed | | | | X | |
| <i>Polygonum</i> sp. | knotweed, smartweed | | X(sp) | | | |

**Table 8.2-2
Plant Species Observed in the Project Area and Immediate Vicinity
(Page 4 of 4)**

| Scientific Name | Common Name | Habitat Type | | | | |
|--|----------------------|--------------|-------------------|-------------|---------|--------------------|
| | | Grassland | Seasonal Wetlands | Vernal Pool | Ruderal | Agricultural Ditch |
| <i>Psilocarphus brevissimus</i> | dwarf woolly-heads | | | X | | |
| <i>Rubus discolor</i> | Himalayan blackberry | | | | X | |
| <i>Rumex crispus</i> | curly dock | | | | X | |
| <i>Salix laevigata</i> | red willow | | | | | X |
| <i>Scirpus acutus</i> | tule | | | | | X |
| <i>Senecio vulgaris</i> | groundsel | | | | X | |
| <i>Silybum marianum</i> | milk thistle | X | | | X | |
| <i>Sonchus oleraceous</i> | common sow thistle | | | | X | |
| <i>Spergularia rubra</i> | sand-spurry | X* | | | | |
| <i>Taeniatherum caput-medusae</i> | | X | | | | |
| <i>Tillaea aquatica</i> | | | | X | | |
| <i>Trifolium hirtum</i> | rose clover | X* | | | | |
| <i>Triteleia laxa</i> | Ithuriel's spear | X | | | | |
| <i>Typha latifolia</i> | cattail | | | | | X |
| <i>Verbena bonariensis</i> | | | | | X | |
| <i>Veronica peregrina</i> ssp. <i>xalapensis</i> | purslane speedwell | | | | X | |
| <i>Vicia americana</i> | American vetch | X | | | X | |
| <i>Vulpia myuros</i> | | | | | X | |
| Note: SP = Stock pond; * = Alkali grassland | | | | | | |

| Table 8.2-3 Animal Species Observed in the Project Area And Immediate Vicinity (Page 1 of 2) | |
|---|-------------------------|
| Scientific Name | Common Name |
| <i>Agelaius phoeniceus</i> | red-winged blackbird |
| <i>Anas platyrhynchos</i> (nesting) | mallard |
| <i>Antilocapra americana</i> | pronghorn antelope |
| <i>Athene cuniculario hypugea</i> | burrowing owl |
| <i>Botaurus lentiginosus</i> | American bittern |
| <i>Buteo jamaicensis</i> | red-tailed hawk |
| <i>Butorides virescens</i> | green heron |
| <i>Canis latrans</i> | coyote* |
| <i>Carduelis psaltria</i> | lesser goldfinch |
| <i>Cathartes aura</i> | turkey vulture |
| <i>Charadrius vociferus</i> | killdeer |
| <i>Circus cyaneus</i> | northern harrier |
| <i>Corvus brachyrhynchos</i> | American crow |
| <i>Cyzicus californicus</i> | clam shrimp |
| <i>Didelphis virginiana</i> | Virginia opossum |
| <i>Egretta thula</i> | snowy egret |
| <i>Eremophila alpestris</i> | horned lark |
| <i>Euphagus cyanocephalus</i> | Brewer's blackbird |
| <i>Fulica americana</i> | American coot |
| <i>Himantopus mexicanus</i> | black-necked stilt |
| <i>Hirundo pyrrhonota</i> | cliff swallow |
| <i>Hyla regilla</i> | Pacific tree frog |
| <i>Icterus cucullatus</i> | hooded oriole |
| <i>Lepus californicus</i> | black-tailed jackrabbit |
| <i>Microtus</i> sp. | vole |
| <i>Mimus polyglottos</i> | northern mockingbird |
| <i>Onchorhynchus mykiss</i> | adult steelhead |
| <i>Passer domesticus</i> | house sparrow |
| <i>Passerculus sandwichensis</i> | savannah sparrow |
| <i>Phasianus colchicus</i> | ring-necked pheasant |

| Table 8.2-3 Animal Species Observed in the Project Area And Immediate Vicinity (Page 2 of 2) | |
|---|----------------------|
| Scientific Name | Common Name |
| <i>Pica nuttalli</i> | yellow-billed magpie |
| <i>Pituophis melanoleucus</i> | gopher snake |
| <i>Plegadis chihi</i> | white-faced ibis |
| <i>Procyon lotor</i> | raccoon |
| <i>Rana catesbeiana</i> | bullfrog |
| <i>Sayornis nigricans</i> | black phoebe |
| <i>Sceloporus occidentalis</i> | western fence lizard |
| <i>Sorex</i> sp. | shrew |
| <i>Sturnella neglecta</i> (nesting) | western meadowlark |
| <i>Tyrannus verticalis</i> | western kingbird |
| <i>Zenaida macroura</i> | mourning dove |
| * Presence of this species confirmed based on recent evidence (scat, feathers, burrows, etc) | |

Table 8.2-4
Threatened and Endangered Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area
(Page 1 of 4)

| Scientific Name Common Name | Federal Status ^a | State Status ^b | CNPS ^c / R-E-D ^d | Other Status | Preferred Habitat | Likelihood That Species May Occur In Project Area |
|---|--------------------------------|------------------------------|---|-----------------|--|---|
| Plants | | | | | | |
| <i>Neostapfia colusana</i> Colusa Grass | T | E | 1B/ 1-3-3 | None | large, deep vernal pools with adobe soils; 5 to 200 meters | Not likely to occur; presumed by CNPS to be extirpated in area |
| <i>Chamaesyce hooveri</i> Hoover's spurge | T | None | 1B 3-2-3 | None | vernally flooded conditions in vernal-pool habitats | Potential to occur |
| <i>Orcuttia pilosa</i> hairy orcutt grass | E | E | 1B 2-3-3 | None | vernally flooded conditions in vernal-pool habitats | Potential to occur |
| <i>Cordylanthus palmatus</i> palmate-bracted bird's beak | E | E | 1B 3-3-3 | None | endemic to California's Central Valley; alkaline soil on alkaline substrate in shadscale scrub or valley grassland | Potential to occur |
| Birds | | | | | | |
| <i>Buteo swainsoni</i> (nesting) Swainson's hawk | None | T | N/A | None | nests in the Central Valley within riparian areas and oak woodlands as well as isolated and roadside trees close to grassland or agricultural foraging habitat; winters in Mexico, Central and South America | Potential to occur |
| <i>Empidonax trailii</i> willow flycatcher | None | E | N/A | SSC | dense riparian habitats along rivers, streams, or other wetlands, in close proximity (less than 20 yards) of water or very saturated soil | Not likely to occur; no suitable habitat |
| <i>Riparia riparia</i> Bank swallow | None | T | N/A | SSC | lowland river valleys with alluvial valleys; require a riparian system and alluvial soil but don't need riparian vegetation; tall vertical banks 1 to 2 meters preferred, banks 0.5 to 10 meters tall have been used. Have been recorded using sand and gravel quarries, sawdust piles, dredge spoils - but most (95%) use natural habitat. | Not likely to occur; no suitable habitat |

Table 8.2-4
Threatened and Endangered Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area
(Page 2 of 4)

| Scientific Name Common Name | Federal Status ^a | State Status ^b | CNPS ^c / R-E-D ^d | Other Status | Preferred Habitat | Likelihood That Species May Occur In Project Area |
|---|-----------------------------|---------------------------|---|------------------|--|---|
| <i>Grus canadensis tabida</i> Greater sandhill crane | None | T | N/A | SSC/ FP | breeds in wetlands and forages in irrigated pastures, rice and grain fields, meadows, and marshes | Potential to occur; may forage in rice field and irrigation ditches in project vicinity during winter |
| <i>Haliaeetus leucocephalus</i> Bald eagle | T (PD) | E | N/A | None | lakes, rivers, and reservoirs adjacent to large trees away from human disturbance | Potential to occur |
| <i>Laterallus jamaicensis</i> Black rail | None | T | N/A | SSC | salt marsh between the high tideline and upland | Not likely to occur; no suitable habitat |
| <i>Strix occidentalis caurina</i> Northern spotted owl | T | | N/A | None | old growth forest with a moderate to high canopy closure; multi-layered, multi-species canopy with large overstory trees | Not likely to occur; no suitable habitat |
| Reptiles | | | | | | |
| <i>Thamnophis gigas</i> Giant garter snake | T | T | N/A | Protected | prefers freshwater marsh and low gradient sloughs, has adapted to drainage canals and irrigation ditches | Potential to occur; presence assumed in most irrigation canals and rice fields |
| Fish | | | | | | |
| <i>Oncorhynchus tshawytscha</i> Winter-run Chinook salmon | T | E | N/A | Critical habitat | Sacramento River and tributaries; spawns in large, permanent coastal streams and rivers, over gravel beds | Potential to occur |
| <i>Oncorhynchus tshawytscha</i> Central valley spring-run Chinook salmon | T | T | N/A | Critical habitat | Sacramento River and tributaries; spawns in large, permanent coastal streams and rivers, over gravel beds | Potential to occur |

Table 8.2-4
Threatened and Endangered Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area
(Page 3 of 4)

| Scientific Name Common Name | Federal Status ^a | State Status ^b | CNPS ^c / R-E-D ^d | Other Status | Preferred Habitat | Likelihood That Species May Occur In Project Area |
|--|--------------------------------|------------------------------|---|---------------------|--|--|
| <i>Oncorhynchus mykiss</i> Central Valley steelhead | T | None | N/A | Critical habitat | Sacramento River and tributaries; spawns in coastal streams and rivers, over gravel beds | Potential to occur; observed in project area |
| <i>Oncorhynchus tshawytscha</i> Central Valley fall/ late fall-run Chinook salmon | C | None | N/A | SC | Sacramento River and tributaries; spawn in large, permanent coastal streams and rivers, over gravel beds | Potential to occur |
| <i>Hypomesus transpacificus</i> Delta smelt | T | T | N/A | None | low-mid reaches of San Joaquin- Sacramento Delta | Not likely to occur; no suitable habitat |
| <i>Pogonichthys macrolepidotus</i> Sacramento splittail | T | None | N/A | SC | backwater sloughs of major rivers | Not likely to occur; no suitable habitat |
| Invertebrates | | | | | | |
| <i>Lepidurus packardii</i> Vernal pool tadpole shrimp | E | None | N/A | None | seasonal pools in unplowed grassland with old alluvial soils underlain by hardpan or in sandstone depressions, water in the pools has very low alkalinity and conductivity | Potential to occur |
| <i>Branchinecta conservatio</i> Conservancy fairy shrimp | T | None | N/A | None | found in large, turbid pools in the northern two-thirds of the Central Valley, inhabit astatic pools located in swales formed by old, braided alluvium, filled by winter/spring rains, last until June | Potential to occur |
| <i>Branchinecta lynchi</i> Vernal pool fairy shrimp | T | None | N/A | None | vernal pools, inhabit small, clear-water sandstone depression pools and grass swales, earth slump, or basalt-flow depression pools | Potential to occur |

Table 8.2-4
Threatened and Endangered Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area
(Page 4 of 4)

| Scientific Name Common Name | Federal Status ^a | State Status ^b | CNPS ^c / R-E-D ^d | Other Status | Preferred Habitat | Likelihood That Species May Occur In Project Area |
|---|-----------------------------|---------------------------|---|--------------|--|---|
| <i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle | T | None | N/A | None | this species has been found only in association with its host plant, blue elderberry (<i>Sambucus mexicanus</i>) | Not likely to occur; no suitable habitat |

Source:

Based on lists generated by the USFWS, CNDDDB, CNPS Database, and species known to occur in Sacramento NWR Complex

Notes:

^a Federal and California Endangered Species Act

- E – Endangered
- T – Threatened
- C – Candidate for listing status
- P – Proposed for listing status
- D – Delisted

^b Status

- SC – United States Fish and Wildlife Service (Sacramento Office) Species of Concern
- SSC – California Department of Fish and Game Species of Special Concern
- P, FP (Protected and Fully Protected) – Species which cannot be taken or possessed without a permit from the Fish and Game Commission and/or Department of Fish and Game
- HP – High Priority species are designated by the Western Bat Working Group as a species imperiled, or at a high risk of imperilment.

^c California Native Plant Society (CNPS)

- 1A – plant species that are presumed extinct in California
- 1B – Plant species that are rare, threatened, or endangered in California and elsewhere
- 2 – Plant species that are rare, threatened, or endangered in California but more common elsewhere
- 3 – Plant species about which we need more information (a review list)
- 4 – Plant species of limited distribution (a watch list).

^d Other Status

- R – Rarity, where the higher number (1, 2, or 3) indicates a higher degree of rarity
- E – Endangerment, where the higher number indicates a higher degree of endangerment
- D – Distribution, where the higher number indicates more limited distribution

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 1 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|---|---------------------|-----------------------------|--|---|
| Plants | | | | |
| <i>fritillaria pluriflora</i> adobe lily | SSC | 1B | chaparral, valley grassland, and foothill woodland in clay soil | Potential to occur |
| <i>myosurus minimus</i> ssp. <i>apus</i> little mousetail | SSC | 3 | alkaline soil on alkaline substrate under vernaly flooded conditions in vernal-pool habitats | Potential to occur |
| <i>eschscholzia rhombipetala</i> diamond-petaled poppy | SSC | 1B | valley grassland in clay soil | Not likely to occur; this species is extirpated in the area according to the CNPS |
| <i>atriplex persistens</i> vernal pool smallscale | None | 1B | alkaline soil on alkaline substrate | Potential to occur |
| <i>atriplex joaquiniana</i> San Joaquin saltbush | SSC | 1B | alkaline soil on alkaline substrate in meadow habitats | Potential to occur |
| <i>lepidium latipes</i> var. <i>heckardii</i> Heckard's pepper-grass | None | 1B | alkaline soil on alkaline substrate in valley grassland habitats | Potential to occur |
| <i>tropidocarpum capparideum</i> caper-fruited tropidocarpum | None | 1A | low, alkaline hills | Not likely to occur; this species is considered extinct in California according to the CNPS |
| <i>atriplex depressa</i> brittscale | None | 1B | clay alkaline soil on alkaline substrate in playa habitats | Potential to occur |
| <i>atriplex cordulata</i> heartscale | SSC | 1B | sandy alkaline saline soil on alkaline substrate in shadscale scrub or valley grassland habitats | Potential to occur |
| <i>astragalus tener</i> var. <i>ferrisiae</i> Ferris' milk-vetch | SSC | 1B | alkaline soil on alkaline substrate under vernaly moist conditions in meadow and valley grassland habitats and seeps | Potential to occur |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 2 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|--|---------------------|-----------------------------|---|--|
| Mammals | | | | |
| <i>perognathus inornatus inornatus</i> San Joaquin pocket mouse | SC | N/A | grasslands, blue oak savannas, needs friable soils | Potential to occur |
| <i>antrozous pallidus</i> pallid bat | SC | N/A | roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows | Potential to occur |
| <i>lasiurus cinereus</i> hoary bat | SC | N/A | woodlands and forests with medium to large-size trees and dense foliage | Not likely to occur; no suitable habitat |
| <i>myotis thysanodes</i> fringed myotis | SC/HP | N/A | widespread in California, occurring in all but the Central Valley and Colorado and Mojave deserts; generally at 1,300 to 2,200 meters | Not likely to occur |
| <i>myotis volans</i> long-legged myotis | SC/HP | N/A | coast ranges, Cascade/Sierra ranges, Mojave Desert mountains, common above 1,200 meters | Not likely to occur |
| <i>myotis yumanensis</i> yuma myotis | SSC/ SC | N/A | forests and woodlands with sources of water over which to feed, roosts in buildings, mines, caves, crevices, occasionally under bridges | Potential to occur |
| <i>myotis evotis</i> long-eared myotis | SC | N/A | widespread in California, avoids the arid Central Valley and hot deserts | Potential to occur |
| <i>myotis ciliolabrum</i> small-footed myotis | SC | N/A | arid woody or brushy uplands, near water, west and east sides of Sierra Nevada; 0 to 2,700 meters | Potential to occur |
| <i>corynorhinus townsendii townsendii</i> Pacific western big-eared bat | SSC/ SC/HP | N/A | prefers mesic areas; roosts in caves or similar structures | Not likely to occur |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 3 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|--|---------------------|-----------------------------|---|---|
| Birds | | | | |
| <i>branta canadensis leucopareia</i> Aleutian Canada goose | D | N/A | nests in the Aleutian Islands and winters in the Central Valley; roosts on open water, forages in grain fields | Not likely to occur; no suitable habitat |
| <i>ixobrychus exilis</i> (nesting colony) least bittern | SSC | N/A | emergent vegetation in freshwater marshes and occasionally saltwater or brackish marshes | Not likely to occur; no suitable habitat |
| <i>empidonax trailii brewsteri</i> (nesting) little willow flycatcher | SC | N/A | nests in isolated meadows and riparian systems of northern and central California; winters in Central and South America | Not likely to occur; no suitable habitat |
| <i>dendroica petechia</i> yellow warbler | SC | N/A | generalist; second growth woodland, gardens, riparian habitats | Not likely to occur; no suitable habitat |
| <i>falco columbarius</i> merlin | SC | N/A | open habitats, open woodland | Potential to occur; may forage over grasslands in winter |
| <i>coturnicops noveboracensis</i> yellow rail | SC | N/A | marshes, wet meadows, freshwater marshes | Not likely to occur; no suitable habitat |
| <i>aquila chrysaetos</i> golden eagle | SC | N/A | open habitats, often close to mountains and hills | Potential to occur; may forage over grasslands in winter |
| <i>buteo regalis</i> ferruginous hawk | SC | N/A | open habitats, grasslands | Potential to occur; may forage over grasslands in winter |
| <i>falco mexicanus</i> (nesting) prairie falcon | SC | N/A | arid and semi-arid plains; nests on rock cliffs in river gorges and occasionally in timbered mountains | Potential to occur; may forage over grasslands year-round |
| <i>falco peregrinus anatum</i> American peregrine falcon | D | N/A | mountain ranges, river valleys, coastal areas | Potential to occur; may forage over project vicinity |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 4 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|---|---------------------|-----------------------------|---|--|
| <i>accipiter cooperii</i> Cooper's hawk | SC | N/A | deciduous forest, woodland, riparian habitats | Not likely to occur; no suitable habitat |
| <i>accipiter striatus</i> sharp-shinned hawk | SC | N/A | woodland, mountainous deciduous/coniferous forest | Not likely to occur; no suitable habitat |
| <i>pandion haliaetus</i> osprey | SC | N/A | habitat along rivers, lakes and coasts | Not likely to occur; no suitable habitat |
| <i>circus cyaneus</i> (nesting) northern harrier | SC | N/A | wet meadow, slough, marsh | Potential to occur; observed foraging over grasslands; no suitable nest habitat in the project area |
| <i>eremophila alpestris</i> horned lark | SC | N/A | open habitats, from coastal dunes and alpine tundra to prairies and deserts; prefers areas with a minimum of vegetation, such as natural or planted low-stature grasslands, cultivated and plowed fields, golf courses, airports, and other relatively barren areas | Potential to occur; observed foraging in grasslands in the project area; may nest in grasslands |
| <i>agelaius tricolor</i> (nesting colony) tricolored blackbird | SSC/SC | N/A | nests next to open water where there is extensive emergent vegetation, blackberry or wild rose bushes; frequently forages in grainfields | Potential to occur; may forage throughout project vicinity; may nest in vegetation along irrigation canals |
| <i>athene cunicularia hypugea</i> western burrowing owl | SSC/SC | N/A | nests and winters in grassland and sparse shrubland habitats throughout california; uses abandoned burrows of burrowing mammals for shelter and nest sites. | Potential to occur; observed in grasslands in the project area; may nest in grasslands |
| <i>larus californicus</i> (nesting) California gull | SC | N/A | open sea, seacoast, beaches, estuaries, salt-water and fresh-water marshes, bays and harbors, garbage dumps, lakes, rives, flooded agricultural lands | Not likely to occur; no suitable habitat |
| <i>asio otus</i> (nesting) long-eared owl | SC | N/A | riparian woodlands and live oak woodlands close to a water source | Not likely to occur; no suitable habitat |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 5 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|--|---------------------|-----------------------------|--|---|
| <i>asio flammeus</i> (nesting) short-eared owl | SC | N/A | Salt-water and fresh-water marshes, tall grass meadows, agricultural lands | Potential to occur; may forage over grasslands in winter |
| <i>chaetura vauxi</i> (nesting) Vaux's swift | SC | N/A | douglas fir and coast redwood forests, during migration they are found in the interior valleys and mountain ridges | Potential to occur; may forage over project vicinity in summer |
| <i>progne subis</i> (nesting) purple martin | SC | N/A | open country, rural areas, especially near water | Potential to occur; may forage over project vicinity during migration |
| <i>cypseloides niger</i> (nesting) black swift | SC | N/A | breeds near sea cliffs and steep-walled canyons with nearby waterfalls | Not likely to occur; no suitable habitat |
| <i>chlidonias niger</i> (nesting) black tern | SSC/SC | N/A | inland marshes and sloughs with dense cattail or other marsh vegetation; winters in South America | Not likely to occur; no suitable habitat |
| <i>piranga rubra</i> (nesting) summer tanager | SC | N/A | riparian woodlands | Not likely to occur; no suitable habitat |
| <i>icteria virens</i> yellow-breasted chat | SC | N/A | dense brush or scrub, especially near water | Not likely to occur; no suitable habitat |
| <i>lanius ludovicianus</i> loggerhead shrike | SSC/SC | N/A | open fields with scattered woodland, open woodland | Potential to occur; may forage over grasslands |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 6 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|---|----------------------|-----------------------------|--|---|
| <i>plegadis chihi</i> (rookery site) white-faced ibis | SSC/SC | N/A | nests in a few isolated areas within the Central Valley; places nests within dense stands of fresh water emergent vegetation near shallow water or muddy fields for foraging; winters mainly in the San Joaquin Valley and Imperial Valley | This species was observed foraging in the rice fields in the project vicinity; no suitable nest habitat in the project area |
| amphibians and reptiles | | | | |
| <i>clermys marmorata marmorata</i> northwestern pond turtle | SSC/SC/ Protected | N/A | ponds, marshes, rivers, streams, irrigation ditches, need basking sites such as partially submerged logs or rocks, and suitable upland habit (sandy banks or grassy open fields) for egg laying | Potential to occur; may forage in some irrigation canals |
| <i>scaphiopus hammondi</i> western spadefoot | SSC/SC | N/A | grassland and valley-foothill hardwood woodlands, vernal pools or seasonal wetlands are essential for egg laying | Potential to occur; may breed in seasonal wetlands in project vicinity |
| Fish | | | | |
| <i>lampetra tridenta</i> Pacific lamprey | SC | N/A | Pacific Ocean, spawn over gravel beds in coastal streams and rivers | Potential to occur in Hunters Creek |
| <i>lampetra ayresi</i> river lamprey | SSC | N/A | Small freshwater tributary streams of the Sacramento-San Joaquin river system | Potential to occur in Hunters Creek |
| <i>acipenser medirostris</i> green sturgeon | SSC/SC | N/A | Pacific Ocean, seldom migrates inland beyond estuaries of large rivers | Not likely to occur; no suitable habitat |
| <i>spirinchus thaleichthys</i> longfin smelt | SSC/SC | N/A | moderately saline water, baysand estuaries | Not likely to occur; no suitable habitat |

**Table 8.2-5
Special-Status Species That May Occur Within a 10-Mile (Minimum) Radius of the Project Area (Excluding Listed Species)
(Page 7 of 7)**

| Scientific Name Common Name | Status ¹ | CNPS/ R-E-D ² | Preferred Habitat | Likelihood That Species May Occur in Project Area |
|---|---------------------|-----------------------------|--|--|
| Invertebrates | | | | |
| <i>anthicus antiochensis</i> Antioch dunes anthicid beetle | SSC | N/A | Recorded only in the Antioch Dunes | Not likely to occur; no suitable habitat |
| <i>anthicus sacramento</i> Sacramento Anthicid beetle | SSC | N/A | Sand slipfaces near bamboo and willow; endemic to sand dune areas of the Sacramento-San Joaquin Delta | Not likely to occur; no suitable habitat |
| <i>linderiella occidentalis</i> California linderiella | SC | N/A | seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan, or in sandstone depressions; water has very low alkalinity, conductivity, and total dissolved solids | Not likely to occur; vernal pool habitat at project site is alkaline; also not known from project vicinity |

Source:

Based on Lists Generated by the USFWS, NWR, CNDDB, CNPS Database, and species known to occur in the Sacramento NWR Complex

Notes:

¹ Status

SC – United States Fish and Wildlife Service (Sacramento Office) Species of Concern

SSC- California Department of Fish and Game Species of Special Concern

Protected and Fully Protected – Species which cannot be taken or possessed without a permit from the Fish and Game Commission and/ or Department of Fish and Game

HP – High Priority species are designated by the Western Bat Working Group as a species imperiled, or at a high risk of imperilment.

² California Native Plant Society (CNPS)

1A Plant species that are presumed extinct in California

1B Plant species that are rare, threatened, or endangered in California and elsewhere

2 Plant species that are rare, threatened, or endangered in California but more common elsewhere

3 Plant species about which we need more information (a review list)

4 Plant species of limited distribution (a watch list).

**Table 8.2-6
Summary of Impacts to Biological Resources and Corresponding Mitigation Measures
(Page 1 of 2)**

| Resource | Impacts | Significance of Impact | Proposed Mitigation | Significance of Impact after Proposed Mitigation |
|-----------------------------------|--|--|---|---|
| potential jurisdictional wetlands | temporary disturbance at Teresa Creek | significant | BIO-1 | less than significant |
| rare plants | potential for temporary disturbance during construction of water line; potential for indirect impacts in area of transmission line routes | potentially significant; no rare plants detected to date | BIO-2 | less than significant |
| Swainson's hawk | permanent loss of foraging habitat, permanent degradation of foraging habitat, temporary disturbance to foraging habitat | significant | BIO-3 | less than significant |
| bald eagle | loss of moderately suitable grassland foraging habitat, as described above for Swainson's hawk | less than significant | none, although BIO-3, above, would reduce impacts to bald eagle habitat | less than significant |
| giant garter snake | temporary disturbance of potentially occupied habitat could result in direct mortality of snakes, increased traffic potentially resulting in increased incidental road-kills | potentially significant | BIO-4 BIO-5 | less than significant |
| salmonids | potential obstruction of seasonal migrations and temporary degradation of habitat | potentially significant | BIO-6 | less than significant |
| branchiopods | low potential for indirect impacts, via altered hydrology, to branchiopod habitat | potentially significant; impacts likely avoidable | BIO-7 | less than significant |
| San Joaquin pocket mouse | loss of moderately suitable habitat potentially occupied by this species | less than significant | none | less than significant |

**Table 8.2-6
Summary of Impacts to Biological Resources and Corresponding Mitigation Measures
(Page 2 of 2)**

| | | | | |
|-------------------------------|---|-------------------------|---|-----------------------|
| bats | development of some grassland habitat over which bats likely forage at low frequencies | less than significant | none | less than significant |
| western burrowing owl | loss, degradation and temporary disturbance of suitable habitat; potential for direct mortality during construction | significant | BIO-8 | less than significant |
| horned lark | loss, degradation and temporary disturbance of suitable habitat; potential for direct mortality during construction | potentially significant | BIO-9 | less than significant |
| swallows | potential for direct mortality, destruction or abandonment of nest sites | potentially significant | BIO-10 | less than significant |
| other bird species of concern | loss of suitable foraging habitat | less than significant | none, although BIO-3, above, would reduce impacts | less than significant |
| western spadefoot | loss of grassland habitat potentially used for dispersal during rainy periods | less than significant | none | less than significant |
| coyote | potential disturbance of occupied dens, potential for mortality | less than significant | none | less than significant |
| migratory birds | collision with stacks | potentially significant | BIO-11 | less than significant |

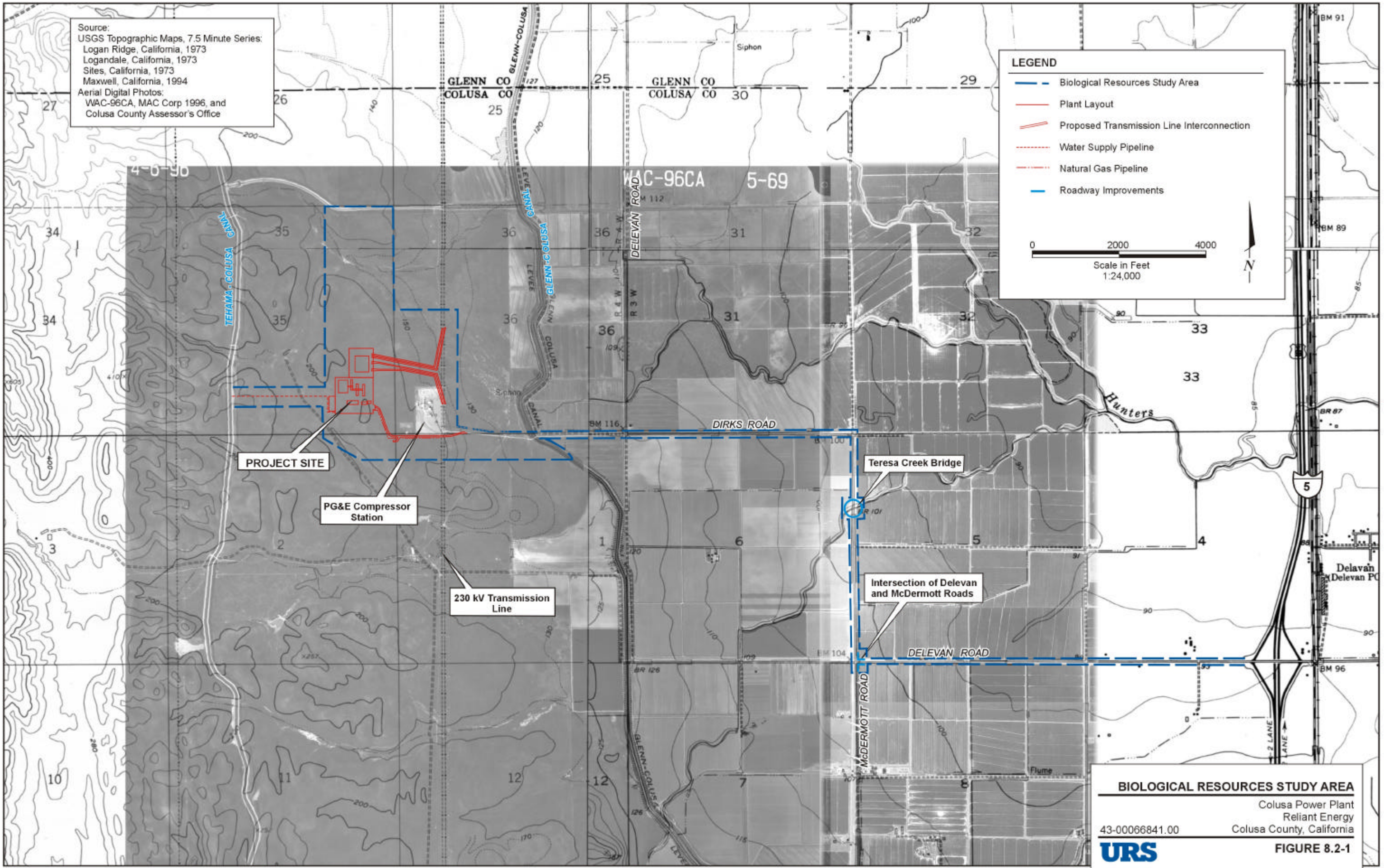
| Table 8.2-7 Applicable Biological Resources Laws, Ordinances, Regulations, and Standards (Page 1 of 3) | | | |
|---|---|---|-------------------------|
| Laws Ordinances, Regulations, and Standards | Administering Agency | Applicability | AFC Section |
| Federal | | | |
| Endangered Species Act of 1973 and implementing regulations, Title 16 United States Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR17.1 et seq.) | U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) | Designates and protects federally threatened and endangered plants and animals and their critical habitat. | 8.2.1.2.1 and 8.2.1.2.3 |
| Section 7 of Fish and Wildlife Coordinating Act, 16 USC 742 et seq., 16 USC 1531 et seq., and 50 CFR 17. | USFWS | Requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on federal jurisdiction over some aspect of the project. | 8.2.1.2.1 and 8.2.1.2.3 |
| Section 10(1)(A) of the ESA | USFWS | Requires a permit to “take” threatened or endangered species during lawful project activities. If no federal nexus for project, a Habitat Conservation Plan (HCP) may be necessary. | 8.2.1.2.1 and 8.2.1.2.3 |
| Section 404 of the Clean Water Act of 1977 (33 USC 1251 et seq., 33 CFR §§320 and 323) | U.S. Army Corps of Engineer (USACE) | Gives the USACE authority to regulate discharges of dredge or fill material into waters of the United States, including wetlands. | 8.2.1.1 |
| Section 401 of the Clean Water Act of 1977 | Central Valley Regional Water Control Board (CVRWQCB) | Requires the applicant to conduct water quality impact analysis for the project when using 404 permits and for discharges to waterways. | 8.2.7 |
| Migratory Bird Treaty Act 16 USC §§703-711 | USFWS and California Department of Fish and Game (CDFG) | Prohibits the non-permitted take of migratory birds. | 8.2.1.2 |
| State | | | |
| California Endangered Species Act of 1984, Fish and Game Code, §2050 through §2098. | CDFG | Protects California’s endangered and threatened species. | 8.2.1.2 |

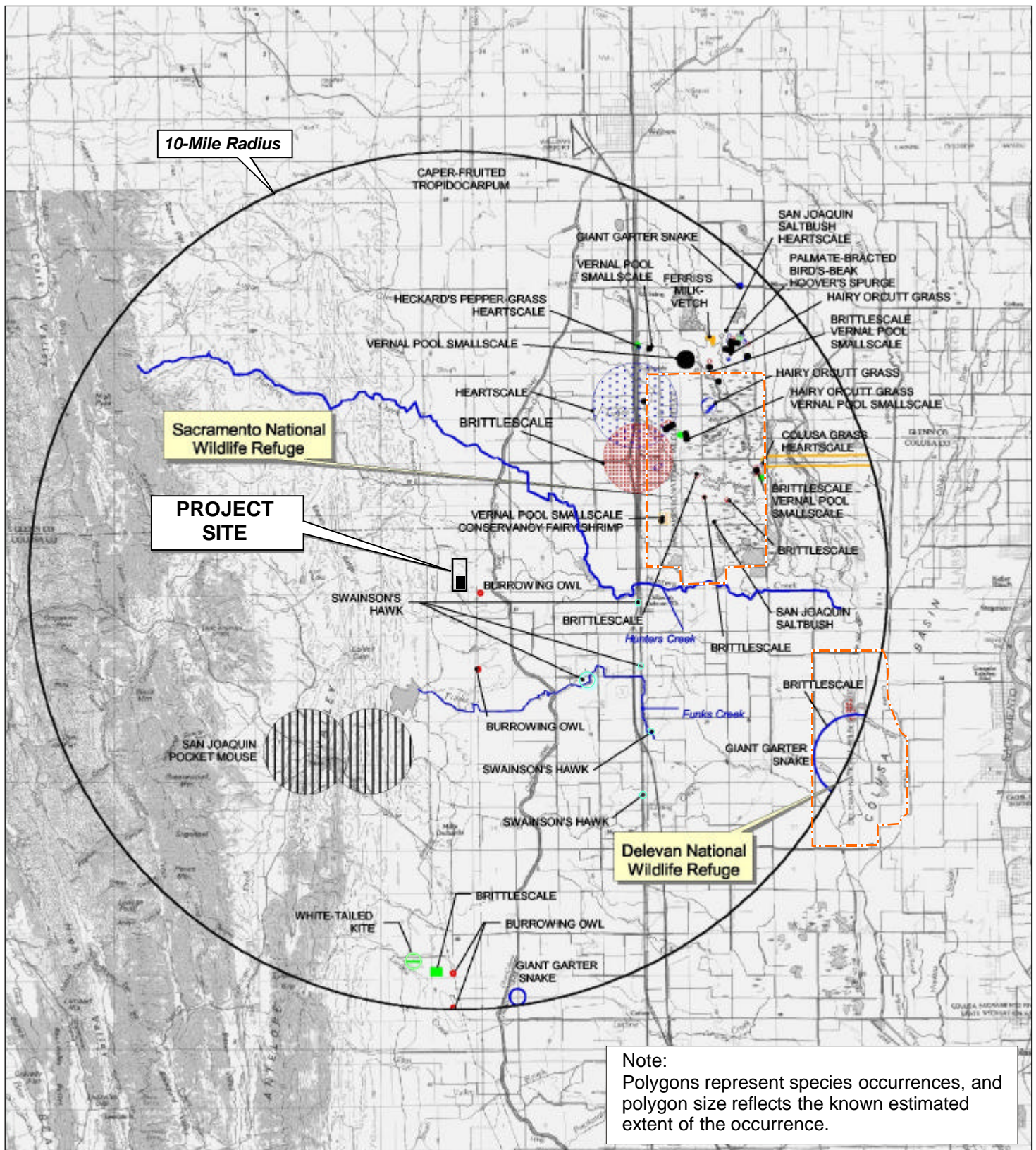
| Table 8.2-7 Applicable Biological Resources Laws, Ordinances, Regulations, and Standards (Page 2 of 3) | | | |
|--|---|--|-------------------------|
| Laws Ordinances, Regulations, and Standards | Administering Agency | Applicability | AFC Section |
| State (continued) | | | |
| Title 14, California Code of Regulations (CCR) §§670.2 and 670.5. | CDFG | Lists plants and animals of California declared to be threatened or endangered. | 8.2.1.2 |
| Fish and Game Code Fully Protected Species. §3511: Fully Protected birds §4700: Fully Protected mammals §5050: Fully Protected reptiles and amphibians §5515: Fully Protected fishes | CDFG | Prohibits the taking of listed plants and animals that are Fully Protected in California. | 8.2.1.2 |
| Fish and Game Code §1930, Significant Natural Areas | CDFG | Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools and significant wildlife habitats. Listed in the CNDDDB. | 8.2.1.1.1 |
| Fish and Game Code §1580, Designated Ecological Reserves | CDFG | The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study. | 8.2.1 |
| Fish and Game Code §1600, Streambed Alteration Agreement | CDFG | Reviews projects for impacts on waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances. | 8.2.1.1.5 |
| Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq. | CDFG | Designates state rare and endangered plants and provides specific protection measures for identified populations. | 8.2.1.2.1 and 8.2.1.2.2 |
| CDFG Policies and Guidelines, Wetlands Resources Policy | CDFG California Environmental Protection Agency (Cal/EPA) CVRWQCB | Provides for the protection, preservation, restoration, enhancement, and expansion of wetland habitats in California, including vernal pools. | 8.2.1.1 |

| Table 8.2-7 Applicable Biological Resources Laws, Ordinances, Regulations, and Standards (Page 3 of 3) | | | |
|---|-----------------------------|---|----------------------------|
| Laws Ordinances, Regulations, and Standards | Administering Agency | Applicability | AFC Section |
| State (continued) | | | |
| Public Resource Code §§25500 & 25527 | USFWS CDFG | Siting of facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value, is prohibited, or when no alternative, strict criteria is applied. | 8.2 |
| Title 20 CCR §§1702 (q) and (v); and | USFWS CDFG | Protects “areas of critical concern” and “species of special concern” identified by local, state or federal resource agencies within the project area, including the CNPS. | 8.2.1.2.2 and 8.2.1.2.4 |
| Title 14 CCR Section 15000 et seq. | USFWS CDFG | Describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site. | 8.2 |
| Local | | | |
| Policies set forth in the County of Colusa General Plan | USFWS CDFG | Encourages preservation and management of biotic resources, including special status. Puts some planning constraints in sensitive habitat areas but does not supersede CDFG and USFWS requirements. | 8.2 |

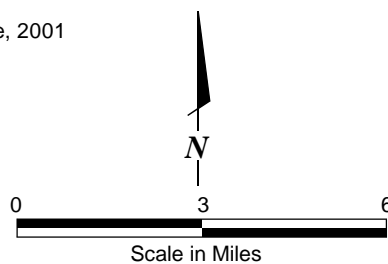
| Table 8.2-8 Summary of Permit Requirements (Page 1 of 2) | |
|--|---|
| U.S. Army Corps of Engineers – Nationwide Permit 14 (If Required) | |
| Requirements | AFC Section/Figure Number/Other |
| Applicant Information | Chapter 1.0 |
| Project Purpose and Need | Chapter 1.0 |
| Project Location (description and map) | Section 3.2, Figure 3.2-1 |
| Project Description | Chapter 3 |
| Project Plans/Drawings | Figures 3.3-1, 3.4-1, 3.6-5 |
| Photographs of Project Site | Present in URS Project Files – Figure 4 in Appendix K |
| Corps Jurisdictional Delineation of Section 404 Jurisdictional Wetlands | Appendix H: Wetlands Delineation Forms |
| Description of Impacts to Jurisdictional Wetlands | Section 8.2.2.1 |
| Description of Mitigation for Project Impacts | Section 8.2.4.1, BIO-1 |
| Summary of Compliance with NWP14 Conditions | Section 8.2.2.1 |
| CEQA Documentation | Entire AFC |
| U.S. Fish and Wildlife Service and National Marine Fisheries Service – Section 7 Consultation | |
| Requirements | AFC Section/Figure Number/Other |
| List of Special Status Species Affected | Table 8.2-3 and Table 8.2-4 |
| Consultation to Date | Section 8.2-6 |
| Current Management Direction | Section 8.2.4.2.3 |
| Project Description and Action Area | Chapter 3.0 |
| Species Accounts and Status | Section 8.2.1.2 |
| Effects | Section 8.2.2.2 |
| Cumulative Affects | Section 8.2.3 |
| Conclusion and Determination | Section 8.2.2 |
| Literature Cited | Section 8.2.8 |
| List of Contacts/Contributors/Preparers | Section 8.2.6, Table 8.2-1 |
| Maps | Figures 8.2-1, 8.2-2, and 8.2-3 |
| California Department of Fish and Game – 1600 Streambed Alteration Agreement | |
| <i>Requirements</i> | <i>AFC Section/Figure Number/Other</i> |
| Applicant Information | Chapter 1.0 |
| Project Purpose and Need | Chapter 1.0 |
| Project Location (description and map) | Section 3.2, Figure 3.2-1 |
| Project Description | Chapter 3.0 |
| Description of Impacts to Streambed (or Lake) | Section 8.2.2.1 |
| Project Plans/Drawings | Chapter 3, Figures |
| Photographs of Project Site | Figure 4 in Appendix K |
| CEQA Documentation | Entire AFC |

| Table 8.2-8 Summary of Permit Requirements (Page 2 of 2) | |
|---|---|
| Regional Water Quality Control Board – 401 Water Quality Certification | |
| Requirements | AFC Section/Figure Number/Other |
| Applicant Information | Chapter 1.0 |
| Project Purpose and Need | Chapter 1.0 |
| Project Location (description and map) | Section 3.2, Figure 3.2-1 |
| Project Description | Chapter 3.0 |
| Project Plans/Drawings | Figures 3.3-1, 3.4-1, 3.5-1, 3.5-2, 3.5-3 |
| Photographs of Project Site | Figure 4 in Appendix K |
| Corps Jurisdictional Delineation of Section 404 Jurisdictional Wetlands | Appendix H: Wetlands Delineation Forms |
| Description of Impacts to Waterbodies or Special Aquatic Sites | Section 8.2.2.1 |
| Description of Mitigation for Project Impacts | Section 8.2.4.1, BIO-1 |
| CEQA Documentation | Entire AFC |





Source:
CDFG, California Natural Diversity Base, 2001



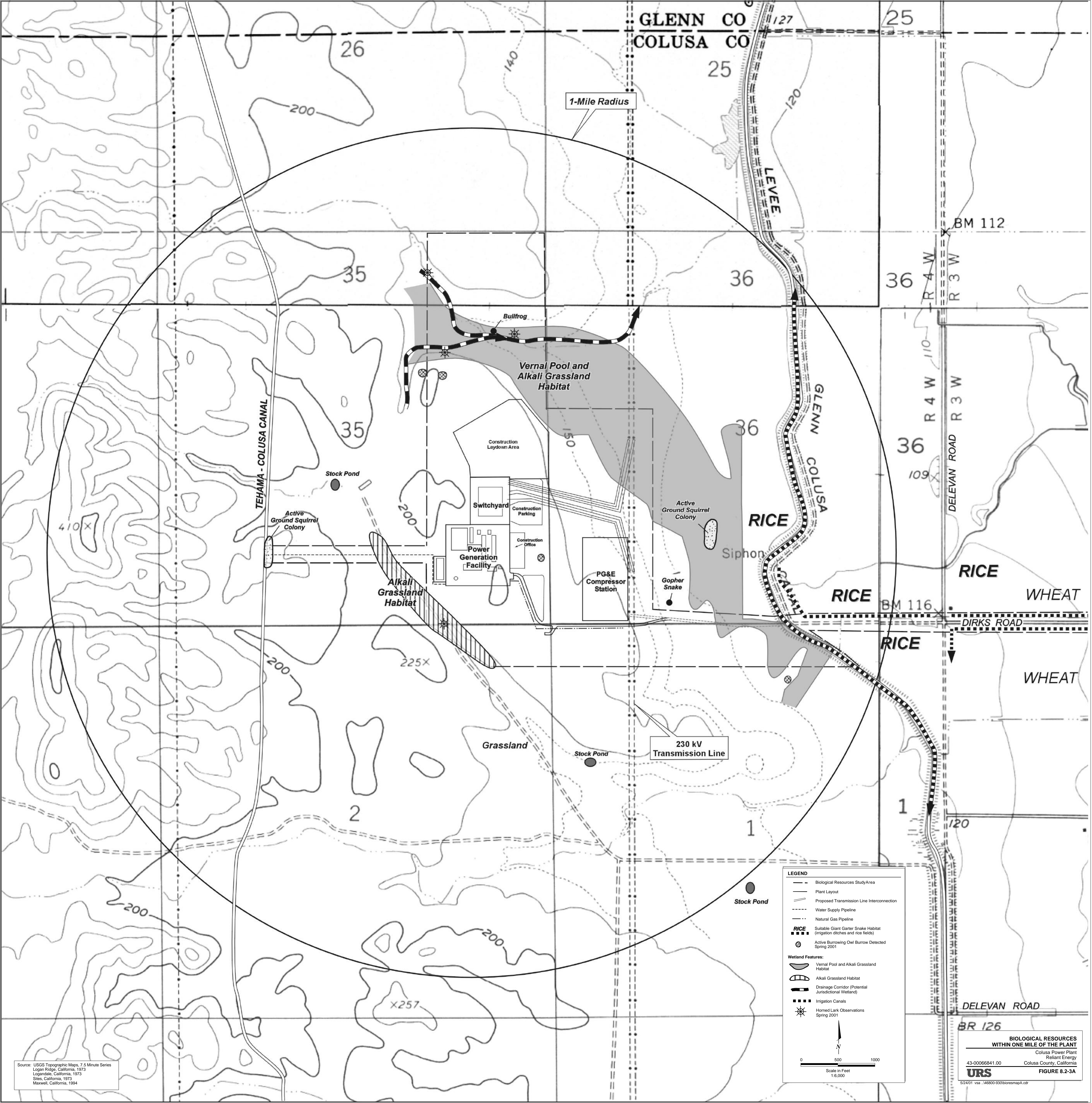
REGIONAL BIOLOGICAL RESOURCES

Colusa Power Plant
Reliant Energy
Colusa County, California

43-00066841.00

URS

FIGURE 8.2-2



Source: USGS Topographic Maps, 7.5 Minute Series
Logan Ridge, California, 1973
Logan Ridge, California, 1973
Stiles, California, 1973
Maxwell, California, 1994

LEGEND

- Biological Resources Study Area
- Plant Layout
- Proposed Transmission Line Interconnection
- Water Supply Pipeline
- Natural Gas Pipeline
- RICE**
- Suitable Giant Garter Snake Habitat (irrigation ditches and rice fields)
- Active Burrowing Owl Burrow Detected Spring 2001
- Wetland Features:**
- Vernal Pool and Alkali Grassland Habitat
- Alkali Grassland Habitat
- Drainage Corridor (Potential Jurisdictional Wetland)
- Irrigation Canals
- Horned Lark Observations Spring 2001

0 500 1000

Scale in Feet
1:6,000

**BIOLOGICAL RESOURCES
WITHIN ONE MILE OF THE PLANT**

Colusa Power Plant
Reliant Energy
43-00066841.00
Colusa County, California

URS

FIGURE 8.2-3A

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